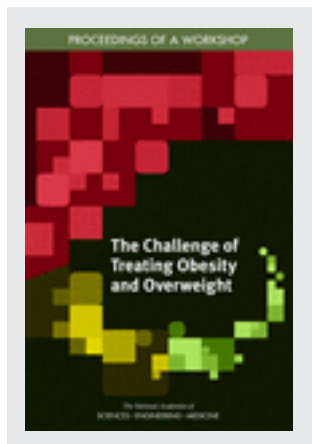


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The Challenge of Treating Obesity and Overweight

PROCEEDINGS OF A WORKSHOP

Steve Olson, *Rapporteur*

Roundtable on Obesity Solutions

Food and Nutrition Board

Health and Medicine Division

The National Academies of
SCIENCES • ENGINEERING • MEDICINE

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This Proceedings of a Workshop was reviewed in draft form by individuals chosen for their diverse perspectives and technical expertise. The purpose of this independent review is to provide candid and critical comments that will assist the National Academies of Sciences, Engineering, and Medicine in making each published proceedings as sound as possible and to ensure that it meets the institutional standards for quality, objectivity, evidence, and responsiveness to the charge. The review comments and draft manuscript remain confidential to protect the integrity of the process.

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Although the reviewers listed above provided many constructive comments and suggestions, they were not asked to endorse the content of the proceedings, nor did they see the final draft before its release. The review of this proceedings was overseen by **SANDRA HASSINK**, Nemours. She was responsible for making certain that an independent examination of this proceedings was carried out in accordance with standards of the National Academies and that all review comments were carefully considered. Responsibility for the final content rests entirely with the rapporteur and the National Academies.

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1

Introduction

The Roundtable on Obesity Solutions of the Health and Medicine Division of the National Academies of Sciences, Engineering, and Medicine held a workshop in Washington, DC, on April 6, 2017, titled *The Challenge of Treating Obesity and Overweight: A Workshop*.¹ Box 1-1 provides the workshop's complete Statement of Task; the workshop agenda appears in Appendix A; the acronyms and abbreviations throughout this *Proceedings of a Workshop* are defined in Appendix B; and the biographies of the speakers and facilitators are provided in Appendix C. Bill Purcell, currently with Farmer Purcell & Lassiter, PLLC, and former mayor of Nashville, Tennessee, introduced the workshop and presented the background on the roundtable. (Box 1-2 provides a brief description of the roundtable.) The discussions covered treatments for obesity, overweight, and severe obesity in adults and children; emerging treatment opportunities; the development of a workforce for obesity treatments; payment and policy considerations; and promising paths to move forward.

It is important to note that this *Proceedings of a Workshop* summarizes information presented and discussed at the workshop. It is not intended to serve as a comprehensive overview of the subject, nor are the citations herein intended to serve as a comprehensive set of references for any topic;

¹The planning committee's role was limited to planning the workshop, and the *Proceedings of a Workshop* was prepared by the rapporteur as a factual account of what occurred at the workshop. Statements, recommendations, and opinions expressed are those of individual presenters and participants and are not necessarily endorsed or verified by the National Academies of Sciences, Engineering, and Medicine, and they should not be construed as reflecting any group consensus.

BOX 1-1
Workshop Statement of Task

An ad hoc committee will plan and conduct a 1-day public workshop that will explore the challenges in treating overweight and obesity in children and adults. The workshop will feature invited presentations and discussions that will explore what is known about current obesity treatment approaches and the challenges involved in implementing them, including their effectiveness (and how “success” is defined); payment for services; training of the workforce that provides the services; and health equity issues involved in treatment. The workshop agenda will also address sustainable collaborations, new insights on implementing treatment-related interventions and policies, and research gaps in addressing treatment challenges. Participants will discuss strategies that hold promise for progress in treating overweight and obesity.

BOX 1-2
Roundtable on Obesity Solutions
(Presented by Bill Purcell)

The Roundtable on Obesity Solutions was established by the National Academies of Sciences, Engineering, and Medicine’s Health and Medicine Division, formerly known as the Institute of Medicine, in 2014 to engage leaders from multiple sectors in solving the nation’s obesity crisis. Its membership includes representatives from health care, academia, business, health insurance, education, child care, government, media, philanthropy, and the nonprofit sector. Through discussions, public workshops, publications, and innovation collaboratives, the roundtable provides a venue for developing multisectorial collaborations and policy initiatives. The goal of the roundtable is to prevent and treat obesity and its adverse consequences across the entire life span and to eliminate obesity-related health disparities.

The roundtable’s activities have highlighted promising multisector environmental and policy approaches and have focused on how to overcome challenges not only in implementation but also in scalability. The roundtable has explored a wide range of sectors and topics, including the role of physical activity; obesity solutions in early childhood; the role of business; the changing media landscape; public perceptions, knowledge, and understanding of the obesity epidemic and its causes and correlates; the role of technology in obesity solutions; better understanding of issues related to management of severe obesity; lessons from international cross-sector efforts; and the impacts and opportunities of public policies at the local, state, tribal, and federal levels. Through all its activities, the roundtable has addressed cross-cutting issues related to weight bias, stigma, adverse childhood experiences, and other issues related to eliminating health disparities in obesity prevention, treatment, and weight maintenance.

only references cited on speaker slides are included. The information summarized here reflects the knowledge and opinions of individual workshop participants and should not be seen as a consensus of the workshop; the Roundtable on Obesity Solutions; or the National Academies of Sciences, Engineering, and Medicine.

THE OBESITY EPIDEMIC

In his opening remarks summarizing the dimensions of the obesity epidemic, Purcell observed that obesity is a complex chronic disease characterized by multifaceted considerations and interactions. (Box 1-3 presents Purcell's summary.) He argued that solutions will require consideration of a wide variety of individual, policy, and environmental factors within a diverse array of settings and with the engagement of a multitude of sectors and leaders that can mobilize needed changes. Like other chronic diseases, he asserted, obesity can be addressed through science-based prevention and treatment approaches. He noted that although the workshop was focused on what is known about treatment, both prevention and treatment are essential to solutions to obesity.

Purcell explained that the planning group for the workshop defined *treatment* as including all behavioral, pharmacological, and surgical therapies. In so doing, he said, the group acknowledged that definitions of success or effectiveness differ depending on the context of the discussion.

ORGANIZATION OF THIS PROCEEDINGS

This proceedings largely follows the organization of the workshop's agenda (see Appendix A), although some of the material has been reorganized and some points made in discussion sessions have been incorporated into summaries of presenters' remarks.

Chapters 2 and 3 provide an overview of what is known about the efficacy of treatments for obesity and overweight in adults and in children and adolescents, respectively, including consideration of lifestyle interventions, pharmacotherapy, and bariatric surgery. Chapters 4 and 5 look at the treatment of severe obesity in adults and in children and adolescents, respectively, from the perspective of obesity medicine specialists, bariatric surgeons, and patients. Chapter 6 describes some emerging opportunities for treating obesity, including new medications, devices, lifestyle interventions, and digital technologies. Chapter 7 considers the development of the workforce for treating obesity, focusing in particular on the competencies that articulate the skills and knowledge that need to be imparted in training this workforce and how those competencies can be incorporated in train-

BOX 1-3
Dimensions of the Obesity Epidemic
(Presented by Bill Purcell)

Purcell began by observing that data gathered by the National Health and Nutrition Examination Survey (NHANES) from 1999 to 2014 provide a baseline against which progress in addressing the obesity epidemic can be measured. The prevalence of obesity stands at 37.7 percent for adults and 17.2 percent for children, he reported (Ogden et al., 2015), and although the rate appears to have plateaued recently for men, it continues to rise for women. These obesity rates for adults more than doubled since 1980.

Purcell continued by reporting that the obesity rate does not differ significantly among non-Hispanic white, non-Hispanic black, and Hispanic men (at 35 percent, 38 percent, and 38 percent, respectively); however, non-Hispanic black and Hispanic women have a significantly higher rate than non-Hispanic white women (57 percent and 47 percent, respectively, versus 39 percent) (Flegal et al., 2016). Such disparities also exist in children and adolescents aged 2–19, with 14 percent and 15 percent of non-Hispanic white boys and girls, respectively, having obesity versus 18 percent and 21 percent, respectively, of non-Hispanic black boys and girls and 22 percent and 21 percent, respectively, of Hispanic boys and girls (Ogden et al., 2016). These disparities appear at an early age, according to Purcell, and persist despite two generations of work on the issue.

Purcell went on to report that severe obesity has been rising among both men and women, from 3.1 percent in men and 6.2 percent in women in 1999–2000 to 4.4 percent in men and 8.3 percent in women in 2011–2012 (Fryar et al., 2014). Men and women do not exhibit marked disparities in severe obesity by ethnic and racial group with the exception of non-Hispanic black women, who have substantially higher rates than other women (17 percent, versus 10 percent for non-Hispanic white women and 9 percent for Hispanic women).

Purcell noted that severe obesity also is increasing in children aged 2–17, from about 5 percent in both boys and girls in 2000 to 9 percent in girls and 8 percent in boys in 2014 (Skinner et al., 2016). Ethnic and racial disparities are apparent in children, with non-Hispanic black and Hispanic boys and girls having significantly higher rates of severe obesity relative to non-Hispanic white children (Ogden et al., 2016).

For the world as a whole, the numbers are less certain, but Purcell noted that as of 2014, it was estimated that 13 percent of the world's population has obesity—11 percent of men and 15 percent of women (WHO, 2016). Like the trend in the United States, he continued, these numbers show that obesity rates more than doubled from 1980 to 2014, just as in the United States.

Purcell closed by observing that estimates of the annual cost of obesity in the United States—encompassing health care costs, lost productivity, reduced quality of life, and obesity prevention efforts—range from \$872 billion (personal communication, January 26, 2017, C. Meyerhoefer, Lehigh University) to as high as \$1.42 trillion (Waters and DeVol, 2016). “Whether you take the high number or the low number,” he said, “the cost to us all, whether it is cost to us individually or as a family or as a nation, remains huge. There is no better time for us to convene and think again about what we need to do, individually and as a nation, to end the epidemic.”

ing. Chapter 8 looks at the considerations payers take into account when making coverage decisions about obesity treatments, along with ways to expand coverage of treatment. Chapter 9 turns to policy considerations with respect to obesity treatment during a time of heightened debate around health policy. Finally, Chapter 10 addresses the need to involve both communities and individuals in the treatment of obesity.

2

Treatment of Obesity and Overweight in Adults

Highlights from the Presentation of Susan Yanovski

- Intensive lifestyle interventions involving behavioral treatments can lead to a mean weight loss of 5–10 percent at 1 year.
- Adding drug treatment to lifestyle interventions in appropriate patients can increase weight loss from 3 to 9 percent relative to lifestyle interventions alone.
- Bariatric surgery leads to the largest and most sustained weight reduction, although different procedures result in different average weight losses, and patients undergoing each procedure vary in weight loss and its maintenance.

Health care providers encourage patients with obesity to lose weight to prevent or ameliorate obesity-related diseases and conditions and to improve the way they feel and function, said Susan Yanovski, co-director of the Office of Obesity Research, National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health. She explained that they use three general modalities to help patients lose weight and maintain weight loss: lifestyle interventions, pharmacotherapy, and bariatric surgery. Drawing on guidelines from professional societies, systematic reviews and meta-analyses, and large randomized controlled trials and observational studies, she summarized what is known about the efficacy of each of these

modalities in adults (in terms of weight outcomes) to lay the foundation for subsequent discussions at the workshop.

LIFESTYLE INTERVENTIONS

Yanovski began by citing a 2013 evidence-based guideline for the management of overweight and obesity in adults from the American Heart Association, the American College of Cardiology, and The Obesity Society (AHA/ACC/TOS) that addresses the efficacy of lifestyle interventions (based on randomized controlled trials). It states that patients who need to lose weight should receive a comprehensive intervention lasting at least 6 months that encompasses diet, physical activity, and other behavior modification (Jensen et al., 2014). The gold standard, Yanovski observed, is an on-site, high-intensity (at least 14 sessions in 6 months), and comprehensive intervention that can be delivered in group or individual sessions by a trained interventionist¹ and persists for 1 year or more. With such an intervention, the mean weight loss seen is 5–10 percent of initial weight.² Jensen and colleagues (2014) describe a high standard of evidence for this guideline.

Based on a high standard of evidence,³ low- to moderate-intensity interventions delivered in primary care have not been shown to be effective, according to Yanovski. She added that other approaches, such as Web-based interventions, are considered secondary because they produce less weight loss, and thus fewer health benefits, with studies showing weight loss of up to 5 kilograms at 6–12 months (moderate standard of evidence).

Behavioral Treatment

Yanovski cited the definition for behavioral treatment of Foster and colleagues (2005, p. 230S) as “an approach used to help individuals develop a set of skills to achieve a healthier weight. It is more than helping people to decide *what* to change; it is helping them identify *how* to change.” She explained that components of behavioral treatment include self-monitoring of food intake, physical activity, and other behaviors; stimulus control, such as keeping unhealthy foods out of the house or making fruits and vegetables more available; goal setting, which may encompass not only weight goals

¹In responding subsequently to a question, Yanovski asserted that the training is what is important, and it does not need to be delivered by a physician or other health professional.

²“Sustained weight loss of 3%-5% produces clinically meaningful health benefits, and greater weight losses produce greater benefits” (Jensen et al., 2014).

³The definitions for “low,” “medium,” and “high” standards of evidence are described in the 2013 AHA/ACC/TOS *Guideline for the Management of Overweight and Obesity in Adults*.

but also behavioral goals; problem solving, such as how to handle an upcoming vacation meal; stress reduction; and relapse prevention, which is critically important, Yanovski said, because “losing weight is the easy part compared to keeping it off.”

Defining the Efficacy of Weight Management Interventions

Yanovski continued by reporting that, according to guidance from the Food and Drug Administration (FDA) for the development of weight management products, a product can be considered effective for weight management if after 1 year of treatment either of the following occurs: (1) the difference in mean weight loss between the groups treated with the active product and placebo is at least 5 percent, and the difference is statistically significant; or (2) the proportion of subjects who lose 5 percent or more of baseline body weight in the active-product group is at least 35 percent and approximately double the proportion in the placebo-treated group, and the difference between groups is statistically significant. According to Yanovski, the second criterion reflects the fact that some people respond to any given treatment and some do not, and the reason for the 5 percent difference is that this amount of weight loss generally is regarded as clinically meaningful in terms of improving health and reducing comorbidities (FDA, 2007). By this standard, she said, “if behavioral treatment were a drug, it would be approvable” by FDA.

Look AHEAD: Action for Health in Diabetes Study

Yanovski described the Look AHEAD: Action for Health in Diabetes study, an example of an intensive lifestyle intervention using behavior modification strategies. In this multicenter randomized controlled trial, more than 5,000 participants with both type 2 diabetes and overweight or obesity were assigned to receive either an intensive lifestyle intervention or diabetes support and education (the control). The participants were followed for up to 11 years, and although the primary outcome of interest was cardiovascular morbidity and mortality, weight also was monitored. The intensive lifestyle intervention included diet, physical activity, and behavioral strategies delivered in group and individual sessions weekly for 6 months, and then three times a month for the next 6 months. Yanovski noted that this intervention met the gold standard approach to treating obesity with behavioral modification. (In response to a question, she reported that a relatively small proportion of individuals [~20 percent] may respond to low-intensity primary care interventions [e.g., advice from a physician on diet and physical activity], but the efficacy of such approaches is relatively low.)

Furthermore, Yanovski continued, at 1 year the patients receiving the intensive lifestyle intervention had lost on average more than 8 percent of

their initial body weight versus 0.6 percent in the control group. Almost 70 percent of the former patients had lost 5 percent or more of their initial body weight, compared with about 14 percent in the control group (Look AHEAD Research Group, 2007). Furthermore, almost 40 percent of the intervention group—about 10 times as many as in the control group—had lost more than 10 percent of their initial weight.

With even the best weight loss treatment, Yanovski stated, results tend to diminish over time. Even after 8 years, however, the group receiving the intensive lifestyle intervention had a greater percentage reduction in body weight—4.7 percent—compared with the control group—2.1 percent (Look AHEAD Research Group, 2014).

Yanovski observed further that the data from this study also shed light on disparities in weight loss in racial and ethnic minority populations. More than 35 percent of the study’s participants were members of racial and ethnic minorities, including about 16 percent African Americans, 13 percent Hispanics, and 5 percent American Indians. In the first year, non-Hispanic whites in the intensive lifestyle intervention arm of the study lost more weight than their African American, Hispanic, or American Indian counterparts (see Figure 2-1). At years 4 and 8, however, weight loss among these four groups was about the same. “There may be less weight loss initially,” observed Yanovski, “but perhaps slower regain.”

The results from this study are encouraging, Yanovski asserted, but

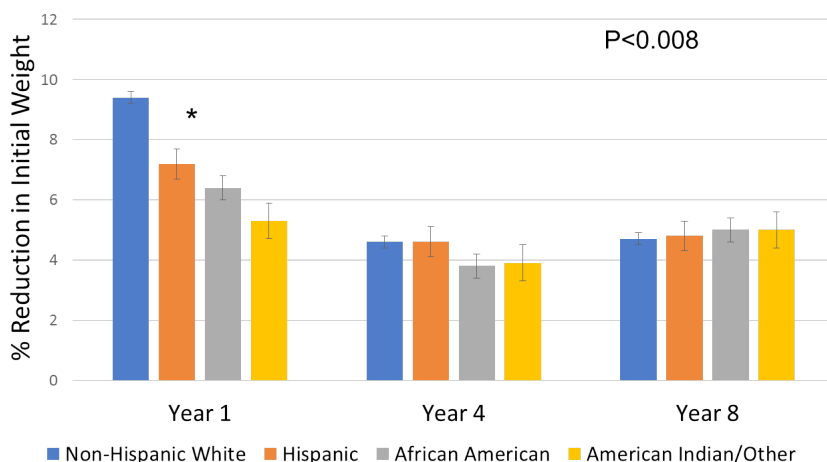


FIGURE 2-1 Percent reduction in initial weight in the Look AHEAD study’s intensive lifestyle intervention group at years 1, 4, and 8 according to race/ethnicity.

SOURCES: Presented by Susan Yanovski on April 6, 2017 (data from Look AHEAD Research Group, 2014). Reprinted with permission.

many challenges remain. Even with the intensive lifestyle intervention, she noted, 30 percent of participants did not lose 5 percent or more of their initial weight. How can these nonresponders lose sufficient weight to improve health?, she asked, and how can longer-term weight loss be maintained and the regaining of weight minimized?

PHARMACOTHERAPY

One answer to these questions, Yanovski argued, embodied in a number of professional society guidelines, is that pharmacotherapy can be used as an adjunct to lifestyle interventions involving behavioral modifications. She noted that FDA has approved nine drugs for weight management treatment for individuals with a body mass index (BMI) of 30 or more, or 27 or more if they have associated comorbidities (see Table 2-1). Four of these drugs—benzphetamine, phendimetrazine, diethylpropion, and phentermine—were approved in 1973 or earlier. All were approved only for short-term use, as a way to jump-start weight loss. Yet all remain on the market, Yanovski said, and are frequently prescribed off-label for periods longer than 12 weeks, which is the generally accepted definition of short-term. In fact, she pointed out, phentermine is by far the most prescribed weight loss drug despite being approved only for short-term use.

TABLE 2-1 Drugs Approved by the Food and Drug Administration for Obesity Treatment

Generic Name	Trade Names	DEA Schedule	Approved Use	Year Approved	Price per Month
Benzphetamine	Didrex	III	Short term	1960	\$20–\$50
Phendimetrazine	Bontril, Prelu-2	III	Short term	1961	\$6–\$20
Diethylpropion	Tenuate	IV	Short term	1973	\$47–\$120
Phentermine	Adipex, Ionamin	IV	Short term	1973	\$6–\$45
Orlistat	Xenical, Alli	None	Long term	1999	\$45–\$520
Lorcaserin	Belviq	IV	Long term	2012	\$240
Phentermine + Topiramate-ER	Qsymia	IV	Long term	2012	\$140–\$195
Bupropion-ER + Naltrexone ER	Contrave	None	Long term	2014	\$180–\$210
Liraglutide	Saxenda	None	Long term	2014	\$900–\$1,000

NOTE: ER = extended release.

SOURCE: Presented by Susan Yanovski on April 6, 2017. Reprinted with permission.

Five drugs, Yanovski continued, have been approved for longer-term use—orlistat, lorcaserin, phentermine-topiramate extended release (ER), bupropion-naltrexone ER, and liraglutide. Orlistat is a gastrointestinal lipase inhibitor that inhibits the absorption of about one-third of dietary fat; it has been on the market since 1999 and in a lower-dose formulation is the only approved over-the-counter approved weight loss medication. Lorcaserin is a selective serotonin receptor agonist. The two combination drugs combine drugs previously approved as monotherapies: phentermine-topiramate ER combines a short-term weight loss medication (phentermine) with an antiseizure and antimigraine medication (topiramate), while bupropion-naltrexone ER combines an antidepressant and smoking cessation drug (bupropion) with a medication for opioid dependence and alcohol abuse (naltrexone). Liraglutide, the most recent long-term therapy to be approved, is a glucagon-like peptide 1 (GLP-1) receptor agonist. At a higher dose, the drug is approved for obesity treatment, and at a lower dose for diabetes treatment. It is the only one of the medications that is injectable. Yanovski added that the two oldest drugs—lorcaserin and phentermine-topiramate ER—are Drug Enforcement Administration Schedule IV drugs because they have at least some potential for abuse. Orlistat, the bupropion-naltrexone combination, and liraglutide are not controlled.

With the obesity medications approved for long-term use, Yanovski and Yanovski (2014, 2015) found that after 1 year, the placebo-subtracted weight loss ranged from about 3 percent for orlistat and lorcaserin to more than 9 percent for phentermine-topiramate, with intermediate weight loss for liraglutide and bupropion-naltrexone. The proportion of patients achieving a weight loss greater than 5 percent and 10 percent at 1 year showed a similar pattern (see Figure 2-2) (data from Khera et al., 2016). Interestingly, Yanovski observed, multiple studies have shown that weight loss at 12 weeks predicts the response at 1 year. For example, depending on the medication used and the intensity of the lifestyle intervention, between 25 percent and more than 50 percent of treated patients may not achieve a 5 percent reduction after 12 weeks of therapy, which means they are exposed to the risks and costs of a drug but have little prospect of benefits. In that case, Yanovski said, guidelines call for consideration of discontinuing the drug and reevaluating treatment options, including the intensification of behavioral strategies, referral to a dietician or lifestyle interventionist, a medication with a different mechanism of action, reassessment and management of medical or other contributory factors, and referral for bariatric surgery in appropriate patients.

In response to a subsequent question, Yanovski replied that a risk-benefit analysis is necessary for any medicine. Each medication, she observed, has its own side effects (although, as she noted, obesity also has side effects). “For example,” she said, “phentermine can raise pulse and blood

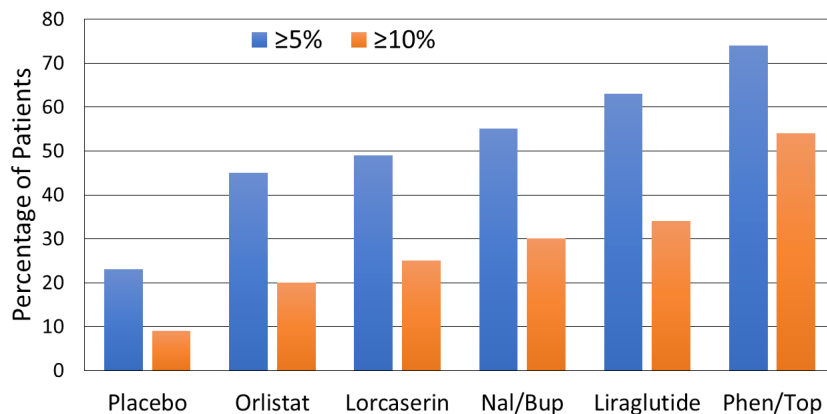


FIGURE 2-2 Proportion of patients achieving ≥ 5 percent and ≥ 10 percent weight loss at 1 year.

NOTE: Nal/Bup = naltrexone-bupropion; Phen/Top = phentermine-topiramate.

SOURCES: Presented by Susan Yanovski on April 6, 2017 (data from Khera et al., 2016). Reprinted with permission.

pressure. Lorcaserin can't be used with SSRI [selective serotonin reuptake inhibitor] antidepressant medications. Topiramate and phentermine during pregnancy can cause an increased risk of cleft lip and palate in offspring. This is a very individualized process. That is why patients need to go to their physician, who knows their medical history and what other medications they are taking."

BARIATRIC SURGERY

Yanovski described three bariatric surgical procedures used commonly in the United States. The first was the Roux-en-Y gastric bypass, which usually is described as a restrictive and malabsorptive procedure, but is also known to have significant metabolic effects on bile acids, gut hormones, and the microbiome. Of the three procedures, Yanovski noted, the Roux-en-Y gastric bypass generally shows the greatest improvement in medical comorbidities.

The second procedure Yanovski described was the laparoscopic adjustable gastric band, an inflatable silicone device placed around the top portion of the stomach that slows and limits food consumption. She explained that it results in less weight loss compared with the Roux-en-Y gastric bypass, but the procedure is reversible.

Finally, Yanovski described the sleeve gastrectomy, sometimes called the gastric sleeve, which also is restrictive because it excises 80 percent of the stomach, and additionally appears to have metabolic effects similar to those of a gastric bypass. This procedure is increasing dramatically in popularity, Yanovski stated, rising from 18 percent of bariatric surgical procedures in 2011 to more than 50 percent in 2016. “It is now the most commonly performed procedure,” she noted, “despite the fact that we have very little long-term data on it.”

The AHA/ACC/TOS evidence-based guideline addresses the benefits and risks of bariatric surgery procedures, Yanovski continued. Jensen and colleagues (2014) suggest that physicians advise their patients with a BMI of 35 or higher and a comorbidity or a BMI of more than 40 that bariatric surgery may be an appropriate option for improving health and offer a referral to an experienced bariatric surgeon for consultation and evaluation (Jensen et al., 2014). According to the guideline, Yanovski reported, depending on the procedure undertaken, mean weight losses in 2–3 years can be 20–35 percent of initial weight (with a high standard of evidence). Some regain of weight is seen, she noted, amounting to about 7 percent of initial weight over 10 years. However, she added, the standard of evidence for this last observation is low, partly because it relies on different procedures than what are common today.

Yanovski stated that in the Longitudinal Assessment of Bariatric Surgery (LABS)—an observational cohort study of adults who underwent their first bariatric surgery at 10 U.S. hospitals between 2006 and 2009 and 70 percent of whom underwent Roux-en-Y gastric bypass, 25 percent gastric band, and 5 percent other—those who underwent the gastric bypass procedure had lost more than 30 percent of their initial weight at 1 year and maintained a fair amount of that weight loss on average at 3 years (Courcoulas et al., 2013). People who underwent laparoscopic gastric banding lost significantly less weight, about 16 percent of initial weight at 3 years, which Yanovski noted is consistent with results of other studies.

Yanovski pointed out that patients undergoing Roux-en-Y gastric bypass surgery tended to lose about the same amount of their initial weight in the first half year after surgery—around 25 percent. After that, she said, groups of patients tended to follow discrete trajectories. She reported that about 2 percent started to regain weight almost immediately, averaging about a 10 percent weight loss after 3 years. Another relatively small group, about 6 percent, continued to lose weight for up to 2 years, at which point they were down to almost half of their initial weight, and at 3 years they still averaged about a 45 percent loss. Other groups had intermediate trajectories, with weight losses averaging 20–40 percent after 3 years.

Results for laparoscopic gastric banding were more variable, Yanovski

continued. About 20 percent of the cohort started to regain their weight and were down 5 percent or less of their initial weight by 3 years. Another small group, about 4 percent, lost almost as much weight as those who underwent gastric bypass, with other groups following intermediate trajectories. Also, Yanovski added, comparisons of sleeve gastrectomy and gastric bypass found that the former produces slightly less weight loss than the latter (Schauer et al., 2017).

Courcoulas and colleagues (2014) looked at more than 100 preoperative and operative variables as predictors of weight and health outcomes in patients undergoing bariatric surgery. “Unfortunately,” said Yanovski, “we found that few baseline variables were associated with 3-year weight change, and the effects were small. These results indicate that baseline variables have limited predictive value for an individual’s chance of a successful weight loss outcome after bariatric surgery.”

KNOWLEDGE GAPS

Yanovski concluded by listing some of the knowledge gaps with respect to the efficacy of obesity treatment in adults:

- the efficacy of drug and surgical treatments in racial and ethnic minority groups and other populations subject to health disparities, such as rural populations and those of low socioeconomic status;
- the effectiveness of newer modes of delivery for lifestyle intervention (such as Web-based and telephonically delivered interventions) in large and diverse populations;
- predictors of response beyond initial weight loss for all obesity treatments, encompassing genetic and phenotypic characteristics (including behavioral and metabolic characteristics) that could allow more targeted treatment recommendations; and
- the long-term safety and efficacy of sleeve gastrectomy and other newer procedures and devices for obesity treatment.

3

Treatment of Obesity and Overweight in Children and Adolescents

Highlights from the Presentation of Ihuoma Eneli

- Behavioral lifestyle treatments for children extended between 26 and 51 hours over a 12-month period generally produced an effective change in body mass index (BMI) z-score, but treatments that exceeded 52 contact hours produced a higher effective change.
- For children younger than 6 years, lifestyle interventions have been effective in reducing weight, with changes as high as 0.38 in BMI z-score 12–18 months from baseline being seen.
- Interventions appear to be equally effective for Latinos, African Americans, and non-Hispanic whites.
- Published trials on the use of medications in children show a small effect, not as large as that of lifestyle interventions.
- The median decrease in BMI with bariatric surgery in pediatric populations is 30 percent, but weight loss surgery occurs in only about 1,200 children per year (extrapolated from 2009 estimates).

Ihuoma Eneli, associate director, American Academy of Pediatrics Institute for Healthy Childhood Weight, and director, Center for Healthy Weight and Nutrition, Nationwide Children's Hospital, began her presentation by reporting that 24.5 million children in the United States have

overweight, obesity, or severe obesity. According to the U.S. Census, this amounts to one in four children. These children, she observed, are at risk for multiple serious comorbidities that can affect virtually all organ systems. She added that children with obesity have an increased likelihood of having obesity as adults.

Drawing largely on meta-analyses and systematic reviews, Eneli reviewed the treatment of obesity in children and adolescents. In 2007, she noted, an expert committee of the American Medical Association (AMA), Health Resources and Services Administration, and Centers for Disease Control and Prevention issued recommendations on management of childhood obesity that were divided into four stages (Barlow, 2007). In the first and second stages, treatment occurs in the primary care provider's office, delivered by a pediatrician or nurse practitioner. In the second stage, an allied health care provider is also involved. In the third and fourth stages, a multidisciplinary care team provides more frequent and intensive care focused on lifestyle modification. The fourth stage, Eneli said, involves bariatric surgery, very low-calorie diets, and medications.

With respect to analyzing what works, Eneli distinguished four categories of excess weight: severe obesity, obesity, overweight, and what she called "crossing weight percentiles rapidly." In 2016, she noted, the U.S. Preventive Services Task Force (USPSTF), updating a 2010 set of recommendations (Whitlock et al., 2010), issued a recommendation that clinicians screen children aged 6 years and older for obesity and offer them or refer them to comprehensive, intensive behavioral treatment aimed at promoting improvement in weight status (USPSTF, 2017). The task force assigned this recommendation a grade of B, Eneli elaborated, meaning that it has moderate certainty of providing a substantial or moderate net benefit. The recommended screening test was BMI, she said, with no recommended interval.

As Eneli noted later in response to a question, every outcome measure has limitations. Nonetheless, she selected a reduction of 0.2 in BMI z-score as a standardized measure of treatment effectiveness, the measure used in the 2016 USPSTF recommendations (O'Connor et al., 2016; Wiegand et al., 2014). The BMI z-score, she explained, allows for the comparison of children of different ages and interventions in different sectors. Studies have suggested that a reduction of 0.15–0.25 in BMI z-score is associated with improved cardiometabolic outcomes, she said. Another study found that a reduction in BMI z-score of 0.2 is equivalent to about a 5 percent decrease in body weight, a benchmark used in the adult population, she noted (see Chapter 2).

LIFESTYLE INTERVENTIONS

Eneli continued by observing that in the 2016 USPSTF draft summary, meta-analyses were grouped by contact hours: 0–5, 6–25, 26–51, and more than 52 hours, in most cases over a 12-month period. She reported that lifestyle behavioral treatments for children that exceeded 52 contact hours over that period generally produced an effective change in BMI z-score, whereas treatments lasting 26–51 hours produced a lower effective change. She explained that these treatments included group sessions, individual sessions, parent-only sessions, child-only sessions, and combinations of these approaches. She added that the interventions frequently involved referral to specialty clinics rather than being primary care–based programs. She noted that they included information on nutrition; physical activity; and behavior modification, such as goal setting, stimulus control, and problem solving.

For children younger than 6, Eneli continued, a Cochrane review (Colquitt et al., 2016) showed that lifestyle interventions are effective in reducing weight, with changes as high as 0.38 in BMI z-score 12–18 months from baseline being seen. For comparison, she noted that an 8-year-old at the 50th percentile in height and the 95th percentile in weight would experience a decline of 0.6 in BMI z-score upon moving into the 85th percentile in weight, which would be equivalent to about an 8.6-pound weight loss. In that case, she observed, a 0.2 decrease in BMI z-score is equivalent to about a 3.3-pound weight loss. Furthermore, she said, because an 8-year-old is still growing, that child could gain 6 pounds over 12 months and still reduce his or her BMI z-score by 0.2 by virtue of gaining 2.5 inches in height. With a 16-year-old who is almost done growing, she added, a decrease of 0.2 in BMI z-score represents about a 9-pound weight loss, or about 5 pounds over 12 months.

According to the 2016 USPSTF report, Eneli continued, weight loss had mixed effects on cardiometabolic outcomes. Blood pressure improved somewhat, as did glucose metabolism, but lipid panel results showed little improvement. However, Eneli said, Ho and colleagues (2012, 2013) found positive effects on the lipid panel, fasting blood sugar, and blood pressure with a decrease in BMI z-score of 0.2–0.3. She added that all studies including bariatric surgery showed a clear benefit of this intervention for cardiometabolic outcomes.

In the studies that reported psychosocial outcomes, Eneli elaborated, comparison of intervention and control groups revealed no consistent differences in quality of life, self-esteem, or depression, according to the USPSTF. On the positive side, she added, children who received the intervention compared with the control group showed no increase in disordered eating. She asserted that effectiveness measures would be improved if psychosocial outcomes could be measured objectively and incorporated.

Other studies, Eneli noted, have looked at ethnicity, sample age, intervention length, intervention structure, and effectiveness measures. Summarizing these studies, she observed that interventions appear to be equally effective for Latinos, African Americans, and non-Hispanic whites. Intervention length does matter, she added, in that a 12-week intervention appears to be inadequate, and most studies looked at 6-month interventions at a minimum. Data on the effectiveness of parent-only versus parent-and-child interventions are inconclusive, she said.

Evidence on the effectiveness of working in the primary care setting also is mixed, Eneli reported. Mitchell and colleagues (2016) found a small effect size in terms of improving weight status, with a larger effect from more treatment contact and from including the pediatrician in that contact. However, Eneli said, a more recent meta-analysis by Sim and colleagues (2016) found a marginal effect. “The way they described this marginal effect,” she explained, “is that if you compare a 10-year-old at the 90th BMI percentile in the control group with a 10-year-old peer in the intervention group, what you would find is a 1 kilogram difference in weight over 3 years.”

Eneli noted that no evidence currently supports the ability of school-based interventions to decrease BMI z-score. “It can be an adjunct treatment,” she said, “but just solely on its own, there is no evidence.” She reported that the Mind, Exercise, Nutrition, Do It! (MEND) program, which the YMCA is adapting to community settings, involved more than 52 hours of contact and showed a decrease of 0.2 in BMI z-score at 6 months that carried through to 12 months (Sacher et al., 2010).

Specialized diets for children who have severe obesity can be effective, noted Eneli. As an example, she cited a high-protein, low-carbohydrate diet that decreased BMI z-score by an average of 0.25 at 12 weeks (Krebs et al., 2010). She added that the protein-sparing modified fast, a very low-carbohydrate diet including 20–40 grams of carbohydrates a day, is used for specific conditions (Ebbeling et al., 2003; Kirk et al., 2012; Schwingshackl et al., 2015). In one case she described, a 16-year-old with a BMI of 99 who was put on the diet decreased his BMI to 85 before undergoing surgery (Watowicz et al., 2015). “There are opportunities to look at some of these treatment options,” she said.

MEDICATIONS, SURGERY, AND FUTURE OPPORTUNITIES

Eneli reported that information on the use of obesity medications with children is sparse compared with their use in adults. The published trials, she noted, show a small effect (Mead et al., 2016), but the effect is not as large as for lifestyle interventions. “There is a lot of work to be done,” she asserted. “There are no good answers. That is why we are envious of our

adult population. It would be nice to look at drugs. It would be nice to look at a combination of drugs and lifestyle.”

With regard to weight loss surgery, Eneli observed, the gastric sleeve is now the most common such surgery performed in the pediatric population, as it is in the adult population. In the Teen-LABS study, she noted, 97 percent of participants had a BMI of 40 or higher at baseline, while 3 years later, only 37 percent of them had that high of a BMI (Inge et al., 2016). “The median decrease with bariatric surgery is 30 percent,” Eneli said. “That brings up [the question of] what age do we do it?”

Extrapolating from a study by Steele (2013), Eneli noted that, despite its effectiveness, weight loss surgery occurs in only about 1,200 children per year. “That means that we still have 24.5 million children who get lifestyle interventions or medical treatments,” she said, “and a large proportion of them get no treatment at all.”

According to Eneli, one prominent research need is for longer follow-up studies. For example, she said, one long-term study showed that approximately 48 percent of participants no longer had obesity after 10 years (Epstein et al., 1994). “There are possibilities,” she stated. “We just need more studies.”

Eneli cited additional potential opportunities, including using the right effectiveness measure, looking at a set of effectiveness measures rather than a single measure, making effectiveness measures more relevant to stakeholders in the field, providing better training, supporting care in clinical and community settings, focusing on children with severe obesity as well as on children who are rapidly crossing percentiles, integrating programs across settings, supporting extended research funding, integrating technology, and linking outcomes to policy on reimbursement and population health (Dietz et al., 2015; Foltz et al., 2015). “We have to find a consistent and systematic way in which [care] is paid for,” she insisted, “because our children deserve it.”

4

Treating Severe Obesity in Adults

Highlights from the Presentations of Individual Speakers

- Treating severe obesity requires experienced teams, including bariatric surgeons, gastroenterologists, obesity medicine specialists, registered dietitians, psychologists, and support staff, but most communities do not have such teams. (Aronne)
- Bariatric surgery can produce major weight loss and health benefits in such areas as remission or improvements in type 2 diabetes, hypertension, dyslipidemia, sleep apnea, psychosocial impairment, and functioning, as well as improvements in employment status. (Wolfe)
- Serious complications from bariatric surgery occur in a low percentage of patients, and the safety of these procedures has been improving over time. (Wolfe)
- Long-term complications of bariatric surgery, including metabolic problems, renal stones, and complications requiring subsequent surgeries, are more difficult to study as patients disperse into the population. (Wolfe)
- Fewer than 2 percent of patients who are eligible for bariatric surgery undergo such surgery in any given year, and the number being treated with pharmacotherapy is similarly low. (Wolfe)
- Peer and other forms of social support are a critical component of aftercare for bariatric surgery. (Massie)

Three speakers at the workshop looked at the treatment of severe obesity in adults, including one who recounted her own experiences with bariatric surgery.

A MULTIFACETED APPROACH

People know they should lose weight, but physical changes that occur in the brain when a person gains weight make losing that weight difficult, observed Louis Aronne, Sanford I. Weill professor of metabolic research, Weill Cornell Medicine. Fattening food damages weight-regulating neurons, he elaborated, and weight-regulating pathways become less responsive to hormonal and neural signals (McNay et al., 2012; Thaler et al., 2012). The result is a system that is biased in favor of weight gain and against weight loss (Apovian et al., 2015). “Your brain loses control of how much food is coming in, how much fat is stored,” Aronne said. “It keeps telling you to gain more weight, either by eating too much or subtly slowing down your metabolism.” Antiobesity medicines work in the parts of the brain that are damaged, he explained. In addition, he noted, some studies have shown that the use of nerve growth factor in the presence of damaged neurons can cure obesity in animals.

According to Aronne, management of drug-induced weight gain is an important component of treatment. For example, many surgery patients fail to do as well as expected because they are taking medicines that prevent them from losing weight (Saunders et al., 2016). Thus, Aronne explained, switching to drugs that are weight neutral or promote weight loss can change outcomes. He cited the example of a patient who had lost 36 pounds after having lap band surgery but had regained all of his weight. Initially taking pioglitazone, metformin, and other medications, he was treated by increasing metformin, reducing pioglitazone, and initiating liraglutide. The result was a 60-pound weight loss, Aronne reported, and he has been stable for more than 1 year at around 190 pounds. “The idea that someone has surgery and they are cured—that is not true,” he said. “You constantly have to be watching to see what do you do next.” For example, he added, if someone with type 2 diabetes has bariatric surgery, “we will give that patient metformin if we see they are starting to get hungry, or if their weight plateaus at a higher level. We won’t force them to take it, but as soon as we see someone starting to have difficulty from their bariatric surgery, we will add a medication.”

Aronne reported that, according to a retrospective review, people who had Roux-en-Y gastric bypass lost more weight when medication was used (Stanford et al., 2017). “Probably the best time to start medical therapy is when someone hits a plateau,” he suggested. “We think that this is a strategy that should be encouraged in patients who have surgery.” He noted

that the treatment gap between the low and high ends of weight loss is being filled with new medications and less invasive procedures at the low end and by the addition of medication to bariatric surgery at the high end (see Figure 4-1). He offered the interesting observation that a medicine for weight loss that does not work before bariatric surgery can work afterward.

Treating severe obesity requires experienced teams, Aronne asserted, including bariatric surgeons, gastroenterologists, obesity medicine specialists, registered dietitians, psychologists, and support staff. “You need the proverbial village to treat the patient with severe obesity,” he said. However, he noted, many communities may not have such teams—they may have some of these specialists but not all. As a result, he said, patients do not get the “support and intuitive care that is necessary in managing problems when they arise.”

According to Aronne, the need for teams reflects the fact that different treatment approaches work together. The Comprehensive Weight Control Center at Weill Cornell Medicine, for example, has five physicians, two of whom are endocrinologists and one a nutrition specialist; a nurse practitioner who performs remote monitoring of patients; dietitians; an obesity medicine fellow; and various students and research aids. Aronne called particular attention to obesity medicine, a new and rapidly growing specialty. In the past few years, he reported, the number of certificates issued

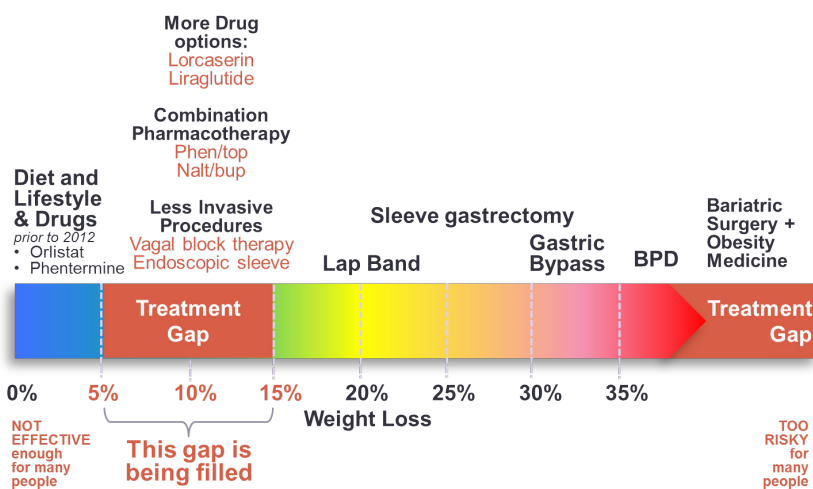


FIGURE 4-1 New drugs and devices can reduce weight and weight-related morbidities, including in the mid-BMI range.

NOTE: BPD = Biliopancreatic Diversion Surgery.

SOURCE: Presented by Louis Aronne, April 6, 2017. Reprinted with permission.

for obesity medicine, which requires continuing medical education and board examination, has quickly surpassed the numbers issued for geriatric medicine, rheumatology, endocrinology, and infectious diseases.

A final need is for insurance coverage for treatment, Aronne argued. “Without coverage for care,” he said, “you can’t do anything. You can’t see the patients.”

BARIATRIC SURGERY

According to Bruce Wolfe, professor of surgery at Oregon Health & Science University, the Longitudinal Assessment of Bariatric Surgery (LABS) Consortium has demonstrated that bariatric surgery can produce major weight loss and health benefits. As an example, he reported that the remission rate for type 2 diabetes following gastric bypass surgery is 62 percent at year 3 (Courcoulas et al., 2013), and is still 59 percent at 7 years. The remission rate for type 2 diabetes with gastric banding is lower—37 percent—he noted. However, he said, remission is improved for a range of other conditions, including hypertension, dyslipidemia, sleep apnea, and psychosocial impairment, as well as for functioning and employment status, in the general population undergoing bariatric surgery.

According to Wolfe, multiple studies with comparison groups have shown improved survival when weight loss is achieved by bariatric surgery. The mortality rate from the surgery is 0.3 percent for all gastric bypass and 0.2 percent for laparoscopic gastric bypass patients (LABS Consortium, 2009), with serious complications in about 4 percent of all patients and about 5 percent of laparoscopic gastric bypass patients. Furthermore, Wolfe added, these data are about 10 years old, and safety has improved since then. “Those who believe that bariatric surgery is unsafe need to be updated regarding the latest data,” he asserted. He reported that about 700 centers have been certified to perform the surgery by the American College of Surgeons and the American Society for Metabolic and Bariatric Surgery, with certification encompassing surgeon training, the provision of data to a central registry, quality improvement, and standardized care protocols. For example, he said, data submitted to the central registry are analyzed, and results are risk adjusted and returned to the centers to serve as a basis for quality improvement. In this way, he explained, the performance of individual surgeons and centers is carefully monitored so that corrective action can be taken if problems are identified.

Wolfe observed that long-term complications are more difficult to study because patients disperse into the population and typically do not return to the center where the surgery was performed. Although the LABS Consortium still had contact with 92 percent of its participating patients at year 7, he noted, determining the frequency of iron deficiency, anemia, or other

problems was infeasible because the patients were going to their primary care providers to diagnose and treat such problems. He explained that the most common nutrient deficiency in these patients is iron deficiency anemia, which is readily correctable. There does not appear to be an adaptation over time to absorption of micronutrients, he said, so the risk of micronutrient deficiency is ongoing, and the need for supplementation continues. He added that, although nutrient deficiencies leading to central or peripheral neuropathy are rare, they can occur and can be tragic when they do.

The absence of a long-term control group makes it difficult to assess the issue of bone metabolism over time, said Wolfe. He noted that about 80 percent of bariatric surgery is performed in women, who have a problem with osteoporosis and fractures as they age, and this further complicates determining whether bariatric surgery has deleterious effects on bones.

Wolfe also pointed out that metabolic complications can occur over time. He explained that hypoglycemia tends to be postprandial and is more common among bariatric surgery patients who did not have diabetes at the time of the surgery. Severe hypoglycemia is rare, he said, but less severe cases are relatively common. He added that, because most people are treated for their symptoms before they ever get to an emergency department or undergo a health care intervention, the incidence of common hypoglycemia is difficult to determine.

Wolfe continued by focusing on renal function. Renal stones are more common among people with obesity, he noted, and there is concern that gastric bypass will decrease renal function and increase the incidence of renal stones. However, he said, the available data in this regard are not clear, with some data showing that people with impaired renal function at the time of bariatric surgery experience improvement in their renal function over time.

Complications requiring subsequent surgeries, such as intestinal obstruction or marginal ulceration, can occur, Wolfe stated. In the LABS Consortium, about 13 percent of patients over 7 years required subsequent surgery of some sort, most commonly for ventral hernia at one of the incision sites. "Hopefully these are all manageable and do not represent a major problem," said Wolfe.

Indices of depression and quality of life tend to respond well to bariatric surgery, Wolfe observed. However, some cases of depression may not respond to weight loss, he noted, and suicide has been identified as somewhat increased following bariatric surgery. According to Wolfe, the numbers are very small, making them difficult to analyze statistically. Suicidal ideation is prevalent among this population before they undergo bariatric surgery, and its incidence following bariatric surgery appears to be about the same.

Wolfe reported that studies of access to bariatric surgery and of who undergoes the surgery show that, as noted above, women are much more

likely to seek and undergo the surgery; moreover, people with private insurance are 2.5 times more likely to undergo the surgery than people with public insurance (Bhogal et al., 2015). He noted that in the LABS Consortium, 8 percent of patients were Medicaid patients, whereas the rate should have been twice that according to epidemiologic data. Despite this population being heavier and having a higher prevalence of diabetes and severe walking and other limitations relative to the non-Medicaid population, Wolfe suggested that providers may be discouraged from accepting public insurance because of its lesser reimbursement.

Wolfe continued by remarking that “there is certainly room for improvement with regard to access and delivery of effective care for obesity.” He pointed out that fewer than 2 percent of patients who are eligible for bariatric surgery undergo such surgery in any given year, and the number being treated with pharmacotherapy is similarly low (Thomas et al., 2016).

Wolfe noted further that obesity is a heterogeneous condition, but clinical care providers tend to put all people with obesity in the same category. He suggested that if there were a basis for telling specific patients their risk for developing an obesity-related condition, such as an obesity-related cancer, doing so could have a great impact on interest in and motivation to enter the health care system and undergo obesity treatment. He asserted that individualization also could help match patients with interventions. “We need more detailed research in order to better characterize the disease risk that the patients face,” he argued, “as well as make better predictions of outcomes from intervention.”

Wolfe also made the interesting point that he routinely counsels patients to be prepared for friends, family, and others to be unkind or have other negative responses to their weight loss.

ONE PATIENT’S EXPERIENCE

“There has never been a time in my entire life, including after bariatric surgery, where I was not at least overweight,” said Nikki Massie, a professional writer, marketer, and online community leader living in Baltimore, Maryland. She started researching bariatric surgery when she weighed about 340 pounds and before trying other interventions. “I had an on-again/off-again relationship with primary care physicians,” she said, partly because her interactions with them around weight often were uncomfortable and unhelpful, and partly because of problems with insurance. “I never kept one for very long,” she noted.

At an informational session with a physician at St. Agnes Hospital in Baltimore, Massie learned that the practice performed Roux-en-Y gastric bypass and laparoscopic adjustable band surgery. After an initial physical examination, she was told that she probably would benefit more from sur-

gery if she had a primary care physician, so she found one who was amenable to the idea of bariatric surgery and willing to work with the bariatric team. Her surgeon originally suggested lap band surgery because she had no associated conditions, but her research had led her to conclude that lap band surgery was not right for her.

Massie underwent Roux-en-Y gastric bypass surgery in January 2008. Her outcomes were good, and she has maintained a weight loss of 125 pounds while undergoing repeated follow-ups. She said she has tended to maintain a higher weight than she perceived herself to have, which caused some psychological difficulties. “There was not a psychologist on staff in my bariatric practice,” she said. “It was up to me to keep up and maintain psychological care on my own. I had trouble with that, because I had some gaps in my insurance. Navigating those schisms between what size you are in clothes and what size you are on the scale . . . became difficult for me.”

For the past 4 years Massie’s weight has been at about 205 pounds, which is “a weight that I can maintain pretty easily.” She exercises regularly, maintains a regular vitamin regimen, and meets with a dietician to regulate her eating. She still sees her bariatric surgeon once per year. “That comes in very handy,” she explained, “because of the fact that my bariatric surgery care is a part of my overall health care. It affects other things in my life and other realms of health care in my life. Last year, I was diagnosed with a very early stage of breast cancer. I had a bilateral mastectomy for treatment. Afterward, my micronutrient levels did some funny things. My doctor wasn’t understanding the pattern of how that was happening. I was able to get him connected to my bariatric surgeon to talk about whether or not these were things that were necessarily of concern because of the surgery I had, because of being treated for cancer, or whether it was something that was relatively normal for somebody who is 8 or 9 years post-op gastric bypass surgery. I thought that was very important, that link between my primary care physician and my bariatric surgeon.”

Since Massie’s surgery, the practice has added dieticians and a series of classes for preoperative education. Patients can enter a longer postoperative program focused on dietary and behavior changes if they regain weight. In-person and online support is available via a private Facebook group.

“I consider the outcome that I got very successful in terms of lifestyle intervention and changing how I move and how I eat,” Massie stated. Since her surgery, she has become a community leader and patient advocate within the bariatric community and serves as a board member of the Obesity Action Coalition. She noted that her social relationships “completely changed for me after bariatric surgery.” She derives value from talking to other people about their experiences and providing support. “Peer support is a very important part of aftercare with weight loss surgery,” she said. “Peer supporters have to be very careful not to try to imitate medical pro-

professionals. On my platform in my community, I always send people to their professionals if they ask a question that is inappropriate for me to answer. . . . But in the social relationships that are built, and the whole culture that is built around weight loss surgery, there is a lot of affirming power.”

FOLLOW-UP CARE

A topic discussed during the question-and-answer session was how to encourage patients to get follow-up care after surgery. Aronne noted that his center tells surgical patients that, at the first sign of weight gain or excessive hunger, they should come in right away. “We look at it the way cardiologists look at chest pain,” he explained. “That, we find, gets people to come back.”

Wolfe said he and his colleagues provide a packet of information informing primary care providers about what to look for in patients who have undergone bariatric surgery and what should be done if any problems are identified. Many of his patients have to travel great distances, he noted, and people from Alaska or Montana are not going to come back to Portland, Oregon, for all their follow-up visits. “If there is an obesity medicine specialist in their community, that is great,” he said. “There often is not, so we are looking for an intermediate way to provide information.”

The moderator of the session, Adam Tsai of Kaiser Permanente in Denver, noted that the Kaiser system has integrated electronic medical records that can be shared and an advice referral function. He explained that this “allows our primary care physicians to consult with us and with our surgeons when they need to know what to do with a micronutrient deficiency, for example.”

Massie emphasized the importance of informing patients that surgery alone is not intended to cure their obesity. “There is this misconception in the patient community that the surgery is supposed to be the end of the line for your obesity treatment,” she observed. As a result, patients can conclude that they have failed if surgery does not completely resolve their obesity. “There is a lot of shame that keeps people from going back to their surgeon,” she said. “I interact with hundreds of post-ops every day through my online community who are straight out ashamed to go back to their surgeon, or are waiting to lose 10 or 15 pounds before they go to see their surgeon about problems, which is working against what they want to do. Pointing out to your patients at the outset of treatment that bariatric treatment may not be the only intervention required to treat their obesity—and to stress that it is a lifelong approach that they are taking, and a lifelong thing that they are embarking on—is probably helpful in getting people back into the room in the long term.”

5

Treating Severe Obesity in Adolescents and Children

Highlights from the Presentations of Individual Speakers

- Multidisciplinary care and family support can help young people lose weight and maintain weight loss. (Highfield)
- A new system for defining severe obesity in children and adolescents would provide greater ability to look at changes in weight over time and better population measures. (Woolford)
- Multidisciplinary programs remain the most common way to treat severe obesity in children and adolescents, but they face such obstacles as high costs, poor reimbursement, high attrition rates, low reach, poor adherence, and poor postprogram weight loss management. (Woolford)
- New medications, better integration of primary care with tertiary care, greater connections with the community, and new uses of technology all could yield progress. (Woolford)
- Few adolescents undergo bariatric surgery, but the current evidence supports considering such surgery as an effective treatment for this population. (Michalsky)

A CASE STUDY

When Nikki Highfield's son Ryan was in fifth grade, "he became different," she said. "He started struggling in school. He was having social

issues. All of a sudden, he couldn't do work that I thought he should be able to do." The family went to a psychologist, and with her help, Ryan's story came out. "He felt like the 'fat' kid," recounted Highfield, who has been a parent advocate for the Healthy Weight Network. "He was tired of being slow, being the last one in baseball, being the last one in basketball."

Through their psychologist, the family began working with the Healthworks program at Cincinnati Children's Hospital. When they started the program, Highfield reported, Ryan weighed 144 pounds, had a body mass index (BMI) of 28, and was diagnosed with severe obesity. After meeting with the care team, including a nutritionist and an exercise physiologist, she "knew right away we had a lot of changes we had to make. We ate out a lot. Even when we ate at home, it was not healthy eating that we were doing." Their dietician gave them a food chart featuring red, yellow, and green foods rather than the food pyramid. "We live by red, yellow, green foods now," she said. "[They're] easy to identify. We talk at home. If you can eat it out of the refrigerator, you are probably okay. Freezer maybe. If it comes off the shelf, it is probably not good for us to eat."

Highfield and Ryan live with her parents, and she said that both she and her mother have suffered from weight issues. However, her belief is that "I don't expect him to make the right decisions if I can't make the right decisions. When we go out to eat, he and I typically share a meal. It is just what we do. We have learned that you probably don't need the whole portion that is being served to you."

Highfield's family has also had heart issues, and Ryan's cholesterol was 174 when they started at Healthworks, with a low-density lipoprotein (LDL) level of 109 and a high-density lipoprotein (HDL) level of 50. When he last had his blood work done, his cholesterol was down to 130, with LDL and HDL levels of 55 and 62, respectively. "That's attributed to his hard work and his exercising," said Highfield. "He really works hard on it."

Ryan's dietician and exercise physiologist have been critical members of his care team, Highfield said. His dietician has given him ideas about how to deal with unhealthy food options or settings. Moreover, Highfield noted, "Healthworks is fortunate because we have one of the nation's best culinary schools in our backyard at Cincinnati State. They offer cooking classes to these kids. Ryan has taken four or five of the cooking classes. . . . It has given him skills so that he can cook himself a [healthy] meal."

Ryan also has found positive role models who have inspired him. At a YMCA camp, he became friends with an 18-year-old who had recently lost 100 pounds. "Scott was able to teach him how to exercise, give him hints, tell him what he should do," Highfield said. He also met another 18-year-old who brought a packed lunch every day. By the sixth grade, Highfield explained, "he started on his own packing his lunch. He would pack turkey or ham roll-ups with a piece of lettuce. He would pack several different

fruits with him. He was drinking water instead of a Capri Sun. All those things started to change.”

The next year, in seventh grade, Ryan tried out for the basketball team—which Highfield characterized as “a step that we never thought he would make”—and made the A team. Then he made the freshman team in high school. “Now he is working toward next year,” said Highfield. “He is not the fastest kid. He was starting to go back on the upswing, not severely, but not the right way. He has found another role model and is on the right track again. He exercises at least 2 hours a day, 6 days a week, with his older cousin. They lift weights. They do cardio. His goal is to make the varsity team next year. Will he make it? Who knows? But the support is there for him to make it.”

Soon Ryan will graduate from high school, Highfield acknowledged, and go to college. “Dorm food is not always the best food,” she said. But the entire family is continuing to help Ryan develop the tools he will need to achieve his goals.

IDENTIFICATION, ASSESSMENT, AND TREATMENT OF SEVERE OBESITY IN CHILDREN

Identification of obesity in children typically has relied on growth charts, noted Susan Woolford, assistant professor and co-director of the Mobile Technology to Enhance Child Health Program, Child Health Evaluation and Research Unit, University of Michigan. Overweight has been defined as a BMI between the 85th and 95th percentiles, with obesity being above the 95th percentile. Severe obesity used to be defined as being above the 99th percentile, but this is not a statistically robust measure, Woolford asserted. It also creates a ceiling effect, she suggested, whereby even significant amounts of weight loss may not result in a change in categories.

Woolford referred to a recent proposal to use 120 percent of the 95th percentile for age and sex to define class 2 obesity for children, which corresponds to a BMI of about 35–40 in adults (Skinner and Skelton, 2014). A cutoff of 140 percent of the 95th percentile for sex and age would be classified as class 3 obesity, she explained, which would correspond to a BMI above 40 for adults. She argued that this system would provide “a much better ability to look at changes in a child’s weight over time.” She added that it also would provide better population measures. For example, she noted, while the prevalence of obesity overall in children may have plateaued over the past few years, class 2 and class 3 obesity has continued to increase, with notable disparities in African American and Hispanic children.

Woolford observed that children with obesity are likely to be at greater risk for many comorbidities, including pulmonary, gastrointestinal, renal,

musculoskeletal, neurologic, cardiovascular, endocrine, and psychosocial issues. Many of these are conditions seen in adults, she noted, but children are showing them at younger ages, meaning they must live with them longer. Also, she said, because children are still developing, they can experience such problems as orthopedic conditions (e.g., Blount's disease and slipped capital femoral epiphysis) that adults do not have.

Woolford also emphasized the need to pay attention to possible psychosocial comorbidities, such as depression and poor self-esteem, even though the evidence that those with severe obesity have a higher prevalence of these psychosocial issues relative to those with class 1 obesity is inconclusive. Moreover, she acknowledged the potential role of genetics in early-onset severe obesity, adding that the MC4 receptor mutation is found in approximately 4 percent of such cases in children and adolescents (Reinehr et al., 2007).

Of the four stages of obesity treatment—prevention plus, structured care, multidisciplinary care, and tertiary care—severe obesity in children generally warrants stage three and four care, Woolford asserted. She explained that multidisciplinary teams typically consist of exercise specialists, psychologists/behavioral specialists, social workers, dietitians, and physicians (Wilfley et al., 2017). Among the activities and tools used by such teams are behavioral modification, food monitoring, group exercise, goal setting, contingency management, token economy, and take-home tasks. Parental participation is vital, stressed Woolford, across the spectrum of ages, and at least 26 contact hours are needed, with 52 being even better. She added that children also need to be evaluated in a systematic way over time.

Woolford continued by emphasizing that such programs need to have an appropriate theoretical basis. To illustrate, she cited self-determination theory, which promotes the progression from amotivation (“I’m just not exercising.”), to external regulation (“I’ll do it because my mother will give me a reward.”), to introjected regulation (“I know I should do it and feel ashamed if I don’t.”), to identified regulation (“I’ll do it because it is important to me.”), to integrated regulation (“I’ll do it because it is integrated with my values.”), to intrinsic motivation (“I’ll do it because I enjoy it and it is pleasurable.”). Motivational interviewing can help move people along this continuum, she explained. For example, a recent randomized controlled trial of motivational interviewing and dietary counseling for treatment of obesity in primary care produced a statistically greater decrease in mean BMI compared with a control group receiving usual care (Resnicow et al., 2015).

If stage three programs are not as effective as needed, Woolford continued, patients may consider stage four approaches. As an example, she cited a liquid diet, although in pediatrics these diets have not been shown to be widely successful since many adolescents find it difficult to adhere to

them. With regard to medications, only one—orlistat, which is approved for ages 12 and above—has been approved for use in pediatrics. However, when adolescents hear that its unpleasant side effects can include flatulence, greasy stool, and fecal incontinence (Petkar and Wright, 2013), most “are not rushing to sign up,” said Woolford.

Many children do not have the BMI level or comorbidities that warrant consideration of bariatric surgery, Woolford observed. Moreover, she added, they may not have the capacity to decide whether they want bariatric surgery; they may not be able to adhere to the changes required for receipt of the surgery; and they also may not be physiologically mature enough to have the surgery.

Given the lack of effective stage four options, Woolford continued, multidisciplinary programs remain the most likely approach. However, they too face many obstacles, she argued, including high costs, poor reimbursement, high attrition rates, low reach, poor adherence, and poor postprogram weight loss maintenance (Skelton and Beech, 2011). Nevertheless, she said, reasons for optimism also exist. For example, she noted, new medications are possible. Primary care could be better integrated with tertiary care, and better connections with the community could improve outcomes, as could new uses of technology with severe obesity. For example, Woolford elaborated, digital devices could be used to tailor treatment, bring in gamification, measure energy balance, conduct remote monitoring, and perhaps lower costs. She and her colleagues developed a text messaging app, for instance, that can identify where children are and send them a message when they are in an eating environment, telling them to consider a healthy alternative. “These types of interventions hopefully will help us move from a winter of despair to a springtime of hope in the treatment of childhood obesity,” she remarked.

BARIATRIC SURGERY

Although obesity has plateaued in some groups, that is not the case for adolescents, noted Marc Michalsky, professor of clinical surgery and pediatrics at The Ohio State University College of Medicine and Nationwide Children’s Hospital. Severe obesity has continued to rise among adolescents aged 12–19 in recent years, he observed, with 9.1 percent falling into this category (Ogden et al., 2016). Children with severe obesity are more likely to have severe obesity as adults, he continued, and as seen in Figure 5-1, BMI during adolescence predicts cardiovascular-related mortality risk later in life (Twig et al., 2016). Citing findings from the National Institutes of Health (NIH)-funded Teen-Longitudinal Assessment of Bariatric Surgery (Teen-LABS study), he reported that children or teenagers who were about to undergo bariatric surgery as part of this study had a high prevalence of

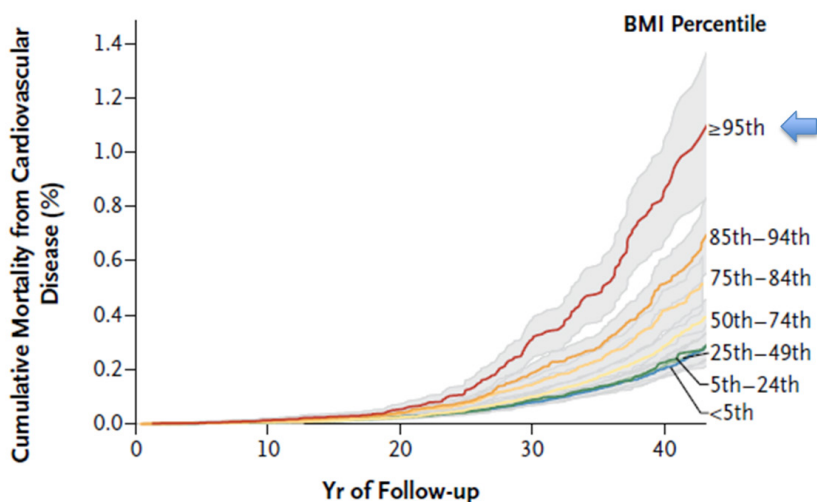


FIGURE 5-1 Childhood body mass index (BMI) predicts cardiovascular mortality in adulthood. SOURCES: Twig et al., 2016. Presented by Marc Michalsky on April 6, 2017. Reprinted with permission from the Massachusetts Medical Society.

dyslipidemia, sleep apnea, joint pain, hypertension, and other comorbidities (Inge et al., 2014b). Phentermine is approved for use in children aged 16 and above, he noted, but is rarely used within the pediatric setting. In addition, he said, very few adolescents undergo bariatric surgery, even though evidence “supports the paradigm of at least considering bariatric surgery as an effective treatment modality for this particular subpopulation.”

Adolescents need “an effective means of losing weight,” Michalsky asserted. He reported that according to recently published 3-year longitudinal data, Roux-en-Y gastric bypass and sleeve gastrectomy produce not only significant weight reduction over time but also a 90 percent remission rate for type 2 diabetes, a 77 percent remission rate for prediabetes, a 66 percent remission rate for dyslipidemia, and improved blood pressure and kidney function (Inge et al., 2016). Surgery does bring certain complications and risks, he acknowledged, such as micronutrient and macronutrient deficiencies, but that “speaks to the importance of being able to remain engaged with these patients long term.” In this regard, he noted, the issue of children going to college or moving out of state permanently is a problem, both in following them up after surgery and following them up when they are on medication.

Michalsky observed that the consensus regarding bariatric surgery for adolescents has changed over time. He pointed out that Inge and colleagues (2004) took a conservative approach to eligibility. Since then, however,

the consensus has developed to be similar, but not identical, to the adult criteria, with particular attention to such issues as Tanner staging, skeletal maturity, lifestyle changes, and psychosocial factors (Michalsky et al., 2012; Pratt et al., 2009). Michalsky noted that in 2014, the Adolescent Bariatric Surgery Designation Center was established by the Metabolic and Bariatric Accreditation and Quality Improvement Program of the American College of Surgeons and the American Society of Metabolic and Bariatric Surgery, which have published standards for optimal care of the metabolic and bariatric surgery patient. These standards were updated in 2016 (American College of Surgeons and the American Society of Metabolic and Bariatric Surgery, 2016). The result, Michalsky explained has been an increasing number of centers in the United States that have been specifically designated as places where adolescent patients can receive bariatric care.

Michalsky identified as the most important issues access to care and varying attitudes related to patient referrals. He noted that adolescent bariatric surgery has plateaued over the past decade (Kelleher et al., 2013). “There is more and more evidence that bariatric surgery for the pediatric population is good,” he said. “But somehow or another it doesn’t seem to be reflected in increased prevalence rates.” Insurance is one challenge, he asserted. According to the Teen-LABS study, insurance authorization at original request is only about 47 percent, compared with more than 85 percent in adult populations (Inge et al., 2014a). Eighty percent of these denials ended up being approved, Michalsky added, but sometimes only after as many as five appeals. “There are some real disparities here,” he suggested.

According to Michalsky, the reason cited most commonly for denial was being less than 18 years old, which he believes reflects the attitudes of pediatricians and family practitioners. He reported that 48 percent of survey respondents in this group of physicians said they would never refer an adolescent patient for a bariatric procedure, and 46 percent endorsed a minimum age of 18 for such surgery (Woolford et al., 2010). Virtually all respondents endorsed participation in a monitored weight management program prior to referral for weight loss surgery.

Nonetheless, Michalsky argued, high-quality data support the use of weight loss surgery in the pediatric population. He added that consensus-driven, best practice guidelines and national accreditation standards have been established and appear to be working well. Yet, he noted, the numbers of procedures have been relatively stable despite these favorable outcomes and standardization of care. “Efforts should be undertaken to increase both public and professional awareness related to this treatment modality as an effective means to help our patients,” he asserted. “We need to do a better job messaging. . . . Bariatric surgery needs to become part of the vernacular that primary care providers are familiar with.”

6

Emerging Opportunities

Highlights from the Presentations of Individual Speakers

- Targeted drugs to counter specific genetic defects, long-acting medications that can be taken orally, new combinations of drugs, and drugs that affect different biological mechanisms are offering new ways to overcome the complex genetic, epigenetic, and environmental interactions at work in each individual. (Heymsfield)
- New devices that inhibit food intake or calorie absorption are being studied intensively, and standing desks, websites, fitness trackers, cellphone applications, and many other technologies offer new ways to change behavior. (Heymsfield)
- Even more important than the devices people are using are the data those devices are collecting, which can be used to deliver targeted messages where and when people need information and motivation. (Bennett)

Three major factors contribute to a person's weight gain, said Steven Heymsfield, professor and director of the Body Composition-Metabolism Laboratory, Pennington Biomedical Research Center, Louisiana State University system: genes, epigenetic modifications that affect the expression of genes, and the interactions of genes and their modifications with environmental factors. However, he added, these interactions create "literally thou-

sands of potential ways any one individual person can develop obesity.” As a result, he asserted, deciphering the underlying causes of obesity in any given individual is “a tremendous scientific challenge.”

Heymsfield reviewed innovative new approaches to controlling obesity in three areas: medications, devices, and lifestyle interventions. In a later presentation at the workshop, Gary Bennett, Bishop-MacDermott family professor of psychology and neuroscience, global health, and medicine, Duke University, looked more closely at technological innovations, and his remarks also are summarized in this chapter.

MEDICATIONS

In some people, targeted treatments have very strong effects, Heymsfield noted. For example, he elaborated, some young children develop severe obesity because of a problem known as hyperphagia, in which they have no control over their food intake and often die early in life. He noted that 10 to 20 genetic abnormalities, often characterized by a single amino acid defect in a hormone, can cause this and related conditions leading to obesity. For instance, some people have zero levels of the hormone leptin, and when they are given small physiological doses of leptin, their weight becomes normal. Although such opportunities are rare, said Heymsfield, “it shows it is possible.”

Finding a medication that can counter such genetic defects is challenging, Heymsfield acknowledged, but the treatment has been successful in some cases. For example, mutations in the melanocortin 4 receptor and closely related mechanisms are found in 2–5 percent of cases of severe obesity. Heymsfield reported that a recently introduced drug, setmelanotide, which is given subcutaneously, has normalized the weight of people with these mutations (Kühnen et al., 2016). “This is a curative mechanism,” he observed. “It shows that we have the ability to have targeted therapies.” He noted that repositories of people who have such mutations are now being created so they can be offered pharmacotherapy.

Setmelanotide is a peptide, and other small proteins may be valuable in treating obesity, Heymsfield continued. He cited another prominent family of peptides, glucagon-like peptide 1 (GLP-1), which affects glucose metabolism (i.e., diabetes and obesity), and explained that saxenda (liraglutide) is a GLP-1 drug now used in treating obesity that can produce weight loss over time. He characterized this as the most potent of the monotherapies for obesity currently approved by the Food and Drug Administration (FDA). A new GLP-1 analog, semaglutide, also can produce weight loss over time, he noted, adding that unlike liraglutide, which is injected subcutaneously once or twice per day, it needs to be injected just once per week.

Like all peptides, Heymsfield continued, including insulin, these medi-

cations need to be injected to prevent them from being digested in the gastrointestinal tract. He then explained that drug developers have been working to create stabilization factors that wrap around peptides and prevent their digestion by acid in the stomach and facilitate their absorption by the gastrointestinal tract. He cited the example of an oral version of semaglutide coformulated with an absorption enhancer known as sodium N-[8-(2-hydroxybenzoyl) amino]caprylate (SNAC). SNAC causes localized pH increase, which leads in turn to higher solubility and protection from enzymatic degradation. Heymsfield reported that initial results show that treatment with this medication causes significant weight loss in a majority of people at 1 year. With more development, he suggested, the result could be a once-per-week oral pill.

Another approach, Heymsfield continued, is to use combinations of medications to create double, triple, or quadruple agents. For example, a GLP-1 agonist such as liraglutide can be combined with a coagonist to create a double peptide. Heymsfield said he had identified more than 23 GLP-1 peptides in development, both alone and in combination therapies. For example, he explained, activating the proglucagon peptide in the brain breaks up the different peptides, each of which has effects on glucose metabolism and body weight. Two such breakdown products are GLP-1, which acts on the GLP-1 receptor, and oxyntomodulin, which works mainly on the glucagon receptor but also on the GLP-1 receptor. Heymsfield noted that one such drug that combines the two is in development, and that early trials have shown putting the two agonists together produces double the amount of weight loss (Finan et al., 2015; Pocai et al., 2009).

Similarly, Heymsfield suggested, peptides that block the SGLT2 receptor, which is involved in reabsorbing sugar in the kidney, could be an effective treatment for diabetes. He observed that the body tends to compensate for the loss of sugar by making a person want to eat more, and a similar counter-regulatory mechanism is involved with exercise. Combining a SGLT2 inhibitor with a compound such as phentermine could block this counter-regulatory effect, he said. He reported that in another set of initial results, this combination produced weight loss of 5–10 percent at 6 months.

Heymsfield added that a compound that blocks the μ opioid receptor in the brain's arcuate nucleus, which is related to hedonic mechanisms such as liking fatty food, was successful at blocking hedonic mechanisms, although it did not cause weight loss in general. However, he noted, people who had particular mutations in their μ opioid receptor pathways did experience weight loss through a combination of pharmacogenetics (Ziauddeen et al., 2013). This is “very early work,” he said, “but promising.”

Finally, Heymsfield described pills that include hygroscopic compounds so they expand like a sponge in the stomach. He reported that trials have

shown that such pills affect appetite ratings and produce modest weight loss over time.

Heymsfield also reported that researchers are currently gathering genomic, metabolomic, proteomic, and other kinds of “omic” data to search for modifiable pathways that could influence energy balance and weight. The eventual result, he predicted, will be personalized medicine reflecting the unique factors that regulate weight in each individual.

DEVICES

Heymsfield briefly touched on several devices for inhibiting food intake. For example, balloons can be swallowed or placed in a person’s stomach endoscopically and then blown up to cause weight loss. He explained that they generally are used in people who have a body mass index (BMI) of 30 or more, are kept in the stomach for 6 months or less, and produce modest weight losses of 5–7 percent over 6 months compared with placebo.

Heymsfield described another approach that entails stimulating the vagus nerve in the gastric region through a surgically inserted device, which tends to produce moderate weight losses. He noted that a recently approved device introduces a sham fistula into the stomach with which food contents can be removed, producing a daily calorie deficit. Another device shunts food from the stomach to the small intestine and has been shown to produce significant weight loss and reduction in diabetes.

“Creativity is booming now with the need to curtail the obesity epidemic,” Heymsfield observed.

LIFESTYLE INTERVENTIONS

Finally, Heymsfield touched on innovative approaches to lifestyle modifications. He cited standing desks, websites, fitness trackers, cellphone applications, and many other technologies that offer new ways to change behavior. “There is a tremendous wave of interest in behavioral therapies,” he said. “We know very little about how effective they are. We are beginning to learn.”

Heymsfield went on to note that some behaviors that do not appear obviously related to obesity could have an effect on weight. As an example, he cited research showing that too little sleep leads to obesity, so sleep treatment programs are being pursued as a way to control weight. Financial incentives such as taxes on sugar-sweetened beverages can change behaviors, he suggested, as can innovative lifestyle management plans. It may even be possible, he observed, to take brain scans of people to determine whether they will respond to particular treatments.

Heymsfield emphasized the importance of supervised medical care for

all treatment plans. “It is very important,” he asserted, “that we have trained physicians and other health care workers . . . who can manage obesity with these complex mechanisms we are developing.”

DIGITAL TECHNOLOGIES

During his remarks later in the workshop, Bennett stated that “the advice that ‘you should ask your doctor’ works very well for most clinical conditions—with the exception of obesity.” Primary care providers often do not deliver counseling and comprehensive obesity care in the primary care setting, he explained. Behavioral weight loss treatment can work well, he suggested, but it works less well when translated into the primary care setting and with higher-risk populations. The lack of attention to obesity in the primary care setting “undercuts our efforts, in my view, to try to help patients realize the clinical significance of the condition,” he said. Primary care providers need the tools to screen, to stage, and to hold patients accountable, he argued. Elaborating, he suggested that such tools could, for example, equip providers to take BMI measurements quickly and easily, present a range of options to patients, help patients engage in a shared decision-making process, and hold patients accountable for the decisions that are made.

Bennett focused on the promise of digital technologies to improve obesity treatment. “The widespread availability of digital devices has utterly changed our lives—that probably goes without saying,” he observed. Even more important than the devices are the data they collect, which, he suggested, hold great potential for “change in a wide range of clinical conditions, but particularly in obesity.”

Bennett continued by observing that new analytic strategies for parsing the data collected by digital technologies have begun revealing clinical meaningful insights. For example, he reported that the past 7 years have seen almost 300 million downloads of weight loss apps, all of which can collect data about the people using them. These data can be used, for instance, to identify whether people are adhering to the Dietary Approaches to Stop Hypertension (DASH) diet. “For patients who have obesity and hypertension,” Bennett said, “we are able to make corrective recommendations on a real-time basis using the data that they would be collecting already.”

As another example, Bennett cited the use of scales in people’s homes to generate text messages from registered dietitians if the user gains weight, followed by telephone calls if the weight gain continues. “We have known about these kinds of stepped care programs for a long time,” he said. “What is new is the ability to have a low-cost digital device in homes broadcasting through cellular networks in real time, and our ability to put

these data on platforms where registered dietitians in clinics can leverage them and deliver care inexpensively and efficiently.”

Bennett suggested that the emergence of artificial intelligence has even greater potential to change how data are leveraged, saying, “The key challenge in obesity treatment, I would argue, but particularly in digital health treatment, is enhancing engagement, keeping patients on the hook, over the extended time horizon that it takes to produce weight loss.” He observed that artificial intelligence is being used to deliver feedback to individuals when they need it and in the language that they want. To illustrate the point, he said, “If a patient is a woman who works outside the home and has kids and likes to exercise outside and it is going to rain, then she gets a recommendation that she find something to do with her kids inside over the weekend.” He believes these technologies can maximize the fit between various treatments and the needs of individuals. They also could be used, he observed, to develop community-level interventions. For example, he said, spatial data could reveal pockets of risk or food deserts, and these conditions then could be ameliorated, or patients could be given tools to overcome them.

Bennett and his colleagues are using self-weighing in the context of a multicomponent weight loss intervention in primary care. He explained that self-weighing produces substantial weight loss on average, but its effectiveness declines over the course of treatment. He observed that artificial intelligence can identify when people are likely to become disengaged, deliver appropriate prompts, and get them back on track. At the same time, he noted, the use of different technologies can allow people to receive information in a way they prefer. He expects to see increasingly more digital therapeutics as a result of the promising outcomes demonstrated in academic and commercial trials.

Bennett continued by observing that many groups have become interested in the potential of digital technologies to help bend the health care cost curve. For example, he said, successful treatment models related to diabetes are providing a window for other conditions and are making companies interested in developing digital treatments. “This is a good sign of where things are likely to go in the next 5 or so years,” he suggested.

Treatments tend to be better when humans are involved, Bennett acknowledged, but new technologies provide many different ways of getting humans involved in obesity treatment, whether through in-person care, telephone contacts, text messages, or other ways. “Adding humans to technological approaches tends to produce better outcomes,” he said. “Technology serves, in my view, to improve the efficiency and the quality of human-delivered care. It doesn’t supplant it.”

Bennett asserted that primary care physicians and other providers will continue to play an important role in triggering the cascade of different

care options, coordinating care, and holding the patient accountable, but that digital technologies can help providers do their jobs. For example, he described a technology that tracked patients who were using a new app and created short counseling recommendations that were inserted into a patient's electronic health record for use by a provider. The recommendation might be to continue participation in a study, work on portion control, or avoid sugary drinks—simple, straightforward, basic advice that could be read to a patient. When providers counseled a patient on diet or exercise in a generic way, Bennett noted, the patients tended not to lose weight. However, if the providers counseled patients using the recommendations generated by the app, the patients lost a substantial amount of weight on average. “We need to armor providers to do what they do best,” Bennett argued.

Bennett observed that such approaches can especially benefit patients at highest risk. For example, he said, many people on the lower end of the socioeconomic spectrum and many racial and ethnic minority groups are likely to own and use smartphones. He has done much of his work with disadvantaged and medically vulnerable patient populations, often in community health centers in rural settings in North Carolina, and he noted that these patients engage at a high level and benefit in ways similar to what is seen in other populations. “It is an ideal approach for reaching into historically disconnected populations,” he added, “and allowing us to ensure that we are delivering comprehensive care from providers in the way that suits them best.”

Workforce and Training

Highlights from the Presentations of Individual Speakers

- Obesity care providers need a wide range of competencies to provide care that meets the needs of their patients. (Rao)
- Educational and professional obesity initiatives that encompass both clinicians who are already in practice and trainees can ensure that competencies do not dwindle as clinicians begin to practice. (Kushner)
- In the past, concepts of obesity prevention and treatment, including basic science, assessment, and management, have not been addressed on medical licensing examinations. (Kushner)
- The new Interdisciplinary Specialist Certification in Obesity and Weight Management was developed to confront the full complexity of obesity. (Gigliotti)

As roundtable consultant Bill Dietz, moderator of the panel on workforce and training, pointed out, the development of the workforce is critical given how many millions of patients with obesity in the United States are underserved. He calculated that there are about 90 adults with severe obesity for every adult practitioner, and about 50 children with severe obesity (body mass index [BMI] ≥ 120 percent of the 95th percentile) for every pediatric practitioner. The three speakers on this panel examined both

the competencies expected of the workforce and ways of developing and sustaining those competencies.

OBESITY CARE COMPETENCIES

According to Goutham Rao, Jack H. Medalle professor and chairman of family medicine and community health at University Hospitals of Cleveland and the Case Western Reserve University School of Medicine, a range of organizations—from the Academy for Eating Disorders to the YMCA—have been involved in a collaborative effort to develop core competencies that obesity care providers should have. He described 10 of these draft competencies as examples of the skills and knowledge expected of the obesity care workforce.

Rao explained that the first core competency is that providers should be able to demonstrate a working knowledge of obesity as a medical condition,¹ including, for example, key measures and their limitations for the assessment of obesity and its comorbidities. He explained that BMI is by far the most common anthropometric measure used to identify obesity. However, he argued, the threshold used in the United States to distinguish between overweight and obesity—a BMI of 30—does not necessarily apply to all populations, such as Asians, for whom lower thresholds generally are accepted. “If you have an interest in obesity, this is something you should know,” he asserted.

The second core competency, Rao continued, is that providers should be able to demonstrate a working knowledge of the epidemiology and key drivers of the obesity epidemic, including the social, cultural, and other factors that have contributed to the epidemic. These drivers are wide ranging, he acknowledged, but members of the workforce should have an understanding of these factors “whether you are in dietetics, nutrition, or any field within medicine.”

The third core competency, Rao said, is that providers should be able to describe the disparate burden of obesity for different populations and approaches to mitigating those inequities. For example, he elaborated, they should be able to explain the role of inequities associated with and determinants of obesity and its outcomes. “It is not enough to know that there are disparities in the prevalence of obesity,” he asserted. “You need to go one step further to explore what might be some potential causes.” As one potential cause, he pointed out that 31 percent of whites live in com-

¹The *Provider Competencies for the Prevention and Management of Obesity* was published on June 7, 2017. See <https://bipartisanpolicy.org/library/provider-competencies-for-the-prevention-and-management-of-obesity> (accessed November 14, 2017). The first competency now reads, “Demonstrate a working knowledge of obesity as a disease.”

munities with one or more supermarkets, compared with only 8 percent of blacks. “Having knowledge of that type of information is the essence of this particular competency,” he said.

Rao explained that the fourth core competency involves interprofessional obesity care, specifically being able to describe the benefits of working interprofessionally to treat obesity in ways that cannot be achieved by a single health professional. For example, he said, providers should be able to summarize the value of and rationale for including the skills of diverse interprofessional teams in treating obesity. As clinical director of the Weight Management and Wellness Center at Children’s Hospital Pittsburgh for 7 years, “I could not have succeeded without the help of dietitians, psychologists, nursing professionals, et cetera. Even within that confined clinical environment, interprofessional care is critically important.”

The fifth core competency involves the integration of clinical and community care for the prevention and treatment of obesity. Rao elaborated by explaining that providers should be able to apply the skills necessary for effective interprofessional collaboration and integration of clinical and community care for obesity. As an example of how to perform effectively in an interprofessional team, he envisioned a provider calling a weight management professional and saying, “I would like to let you know that I raised Mr. Webb’s insulin dose because his diabetes was not well controlled. Please let me know if you plan to make any changes to his dietary plan.” He added, “that could happen within my hospital setting, but it is not yet the normal practice.”

The sixth core competency involves discussions and language related to obesity, Rao continued. The language related to obesity is critical, he noted, such as using the word *overweight* rather than *fat*. Providers should use patient-centered communication when working with individuals with obesity and others, Rao said, and discuss obesity in a nonjudgmental manner using person-first language in all communications. One approach, he noted, is to ask for permission: “I am concerned about your weight and its impact upon your health. Would it be okay if we discussed this?” Another is to use an open-door approach: “I want to let you know that I am concerned because your daughter’s BMI percentile is 98.” When a patient asks what that means, the provider immediately follows up with, “It means she is at a higher weight than the majority of girls her age. This puts her at risk for problems such as diabetes and high blood pressure. Is this something that concerns you as well? Is this something you would like to work on together?” According to Rao, “It is a very gentle approach. It expresses concern. It uses respectful language.”

The seventh core competency is to recognize and mitigate weight bias and stigma. Rao related the story of Gina Score, who was a 14-year-old girl in 1999 when she attended a boot camp in South Dakota. She was about

5'4" tall and weighed 226 pounds. Sent on a forced run on a very hot day for about 3 miles, she quickly fell behind the other girls, and no one looked back to see how she was doing. On the way back from the run, the counselors and the other girls found her face down on the ground, about halfway up the trail. Rao explained that "nobody called 911. She was foaming at the mouth. Finally, somebody did something. She died a few hours later. I always point out that . . . had she been a slender girl, or had she been of a different ethnicity or a different background, I think somebody would have done something. She faced the ultimate humiliation and, of course, the ultimate consequence." Rao emphasized that providers need to minimize bias toward people with obesity and recognize and mitigate the biases of others. For example, he said, while a slender patient coping with knee arthritis might be given a steroid injection, a very similar patient with obesity might be told simply to lose weight, even though the same treatment could have benefited her.

The eighth core competency involves accommodating people with obesity. As described by Rao, this competency means providers should implement a range of accommodations and safety measures specific to people with obesity. "Privacy and respectfulness are critically important," he said. For example, he noted, scales connected to health care professionals by Wi-Fi are increasingly popular because of the privacy they provide.

The ninth core competency is providing evidence-based care and services for people with or at risk for obesity. Rao stated that BMI and other anthropometric measures, such as waist circumference, should be evaluated routinely, and evidence-based individual and family behavioral change strategies such as motivational interviewing and behavioral therapy should be employed. An example is to replace the statement "It's pretty simple—get to the grocery store once a week and give up fast food" with "You find it hard to make the time to shop and cook meals and find fast food a lot more convenient." As Rao pointed out, "I guarantee you will get a better response from the patient and more engagement as you go forward."

The final core competency involves special concerns, such as providing evidence-based care and services for persons with comorbidities. Rao cited the example of an eighth grader who is sent to the school nurse's office after striking her head on the edge of her desk and suffering a small bruise. Upon questioning, she says that she hit her head when she inadvertently fell asleep in class and that this happens quite often. She tells the nurse that her younger brother, with whom she shares a room, always complains that she snores. The school nurse, having some knowledge in this area, suspects obstructive sleep apnea and speaks to the girl's parents, who in turn seek appropriate evaluation and care. "That is the basic level that we would expect from people who are concerned about this issue," said Rao.

EDUCATIONAL AND PROFESSIONAL OBESITY INITIATIVES

Educational and professional obesity initiatives, such as those focused on developing the competencies described by Rao, need to be both top-down and bottom-up, asserted Robert Kushner, professor of medicine, Northwestern University Feinberg School of Medicine, and director, Center for Lifestyle Medicine at Northwestern Medicine. This means, he elaborated, that the initiative should encompass both clinicians who are already in practice and trainees. In the former case, he explained, important goals are to create a subspecialty or focused practice and provide continuing medical education; in the latter case, important goals are to develop educational domain competencies and entrustable professional activities related to obesity and to include obesity-related items on the step exams of the United States Medical Licensing Examination (USMLE). Furthermore, he argued, it is important to pursue these goals in parallel so that competencies developed during a student's education do not fade when the student begins to practice. "We have to think in terms of all those levels all at once," he suggested.

Kushner began by looking at the exams medical students and residents must take to advance in their careers. "People do learn by what is on the test," he observed, which means that the USMLE is critical in shaping students' ability to apply knowledge, concepts, and principles and demonstrate fundamental patient-centered skills that constitute the basis of safe and effective patient care. He and five colleagues reviewed a list of items that included obesity-related keywords—such as *obesity*, *obese*, *body mass index*, and *weight loss*—that had been selected by content experts and identified by the staff of the National Board of Medical Examiners. Using a rubric developed by the American Board of Obesity Medicine, which divided items into four domains and 107 possible subdomains, they determined that only 36 percent of the items with obesity keywords were judged to be directly related to obesity (Kushner et al., 2017a). Of those items, Kushner said, the vast majority pertained to the diagnosis and management of obesity-related comorbidities—such as type 2 diabetes, sleep apnea, metabolic syndrome, and polycystic ovarian syndrome—rather than obesity. He added that most of the obesity-coded items were found in four organ system categories—cardiovascular, endocrinology, female reproduction, and respiratory—and that 80 percent of the coverage of obesity-coded items was limited to six subdomains. The current concepts of obesity prevention and treatment, including basic science, assessment, and management, were not addressed.

According to Kushner, the group's key recommendation was that items be added to the exams to cover the following topics: basic science of obesity; socioeconomic and behavioral determinants of obesity; assessment, diagnosis, and treatment of obesity per se; behavioral medicine; obesity

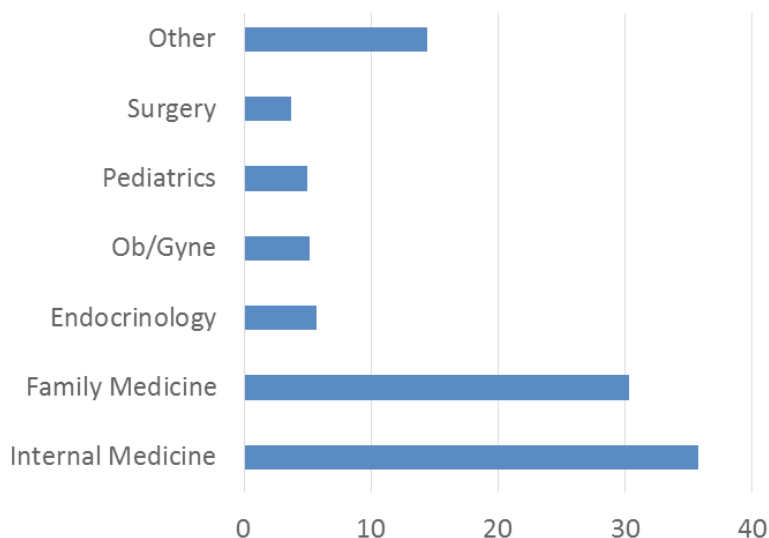


FIGURE 7-1 Average percent distribution of medical specialties.

NOTE: Ob/Gyne = obstetrics and gynecology.

SOURCE: Presented by Robert Kushner on April 6, 2017. Reprinted with permission.

pharmacotherapy; bariatric surgery; and weight bias and discrimination. The group also encouraged the exam developers to use people-first language, such as “a patient with obesity” rather than “an obese patient.” Lastly, it recommended that obesity content experts be assigned to the USMLE item-writing committees. “To their credit,” reported Kushner, “they asked me, and I am now serving on the chronic care committee of this examination in writing 40 items per year to enrich the pool. I will be, hopefully, among many who will be doing that.”

Kushner also discussed the American Board of Obesity Medicine’s rationale for developing an obesity medicine physician pathway. Certification brings increased recognition and competency to the field, he observed, and lays a foundation for improved reimbursement. He noted that anticipated advances in obesity care over the next decade in the areas of pharmacotherapy, surgical procedures, and devices will require specialty training and expertise. In addition, he suggested, certified physicians can serve as clinical and educational champions at the local and national levels. He noted that board certification would establish standards of appropriate knowledge and professional practice in obesity medicine.

Kushner reported that between 2012 and 2016, the number of obesity physician diplomats grew from 587 to 2,068, with primary care clinicians most often being certified (Kushner et al., 2017b) (see Figure 7-1). It is a relatively new specialty, he said, but he asserted that these are the kinds of trends that will develop the workforce.

INTERDISCIPLINARY SPECIALIST CERTIFICATION IN OBESITY AND WEIGHT MANAGEMENT

According to Linda Gigliotti, consultant with the Diocese of Orange (California) as director of wellness programs, the new Interdisciplinary Specialist Certification in Obesity and Weight Management was developed to confront the full complexity of obesity. As it became clear that dietary manipulation could not fully address the problem, she explained, dietitians sought additional training to become more skilled in working with clients who have obesity. In the early 2000s, the Commission on Dietetic Registration began providing certificate-of-training programs for adult management, followed by a special training program on childhood and adolescent weight management. An advanced level in adult weight management was added in 2010. “These are very intensive training programs,” said Gigliotti, that include prereading, 2.5 days of live presentations, and a one-time opportunity for a posttest to secure a certificate. Between 35 and 50 hours of continuing education are offered for completing the certificate, which she noted has been extremely popular with dietitians, more than 20,000 of whom have completed the courses. Up to six different certificate training sessions continue to be offered each calendar year.

Gigliotti observed, however, that many people attending these certificate programs have expressed the desire for a credential that reflects additional expertise and lends credibility to dietitians who are working with people with obesity. At the same time, she noted, other disciplines in health care have recognized the same need, as demonstrated by the medicine credential offered by the American Board of Obesity Medicine and a credential for bariatric nurses developed by the American Society of Bariatric and Metabolic Surgery.

In early 2013, Gigliotti continued, the Commission on Dietetic Registration, the credentialing agency for the Academy of Nutrition and Dietetics (AND), took the lead in developing a new credential. Before work began on the credential, however, several groups within the AND expressed interest in developing an interdisciplinary credential. Such a credential, Gigliotti explained, could reflect the fact that obesity is a multifactorial, chronic disease requiring interdisciplinary intervention. After some consideration and study, a decision was made to move forward with developing the interdisciplinary Certified Specialist in Obesity and Weight Management (CSOWM) credential.

Gigliotti reported that an Interdisciplinary CSOWM Practice Analysis Task Force reviewed the licensure and certification requirements of several allied health professional groups to determine the degree to which they were involved in weight management and obesity treatment, as well as their interest in pursuing a specialist certification in this area. Their recommenda-

tion, she said, was to include the following professions in the certification: registered dietitian nutritionists, physician assistants, nurse practitioners, clinical exercise physiologists, licensed behavioral clinical psychologists or therapists, and licensed clinical social workers. She explained that work is ongoing to develop the certification exam and repeat a practice analysis, in part to consider other professions. In response to a question, she noted that the Commission on Dietetic Registration also is working to get the word out about the new certification. “This is definitely a work in progress,” she said.

MAKING ROOM FOR WORKFORCE DEVELOPMENT

One issue discussed in the question-and-answer period was how to make room for obesity training in a medical education curriculum that is already crowded with subjects. Rao pointed out that subjects that used to be part of the medical curriculum have been removed as priorities have shifted. “As things become more important from a public health standpoint,” he said, “they will start to enter into the curriculum.” In addition, he observed, an initiative among a small group of schools can spread significantly when it addresses a need in medical education and practice.

Kushner pointed to the importance of having a local champion who can advocate for a subject and integrate that subject into instruction in multiple ways. “For example,” he said, “most of our obesity is in the endocrine module, but my colleagues and I are ensuring that obesity is also part of the cardiovascular module, part of the pulmonary module, and everything else. . . . You have to walk the walk and actually push it forward.” This can happen not only at large medical schools but elsewhere as well, Rao added. As an example he cited Project Echo, which started in New Mexico with the goal of training primary care physicians to manage complex medical problems. The prototype, he explained, was hepatitis C management, with the project showing that not just primary care physicians but also advanced care practitioners such as nurse practitioners could provide care for these patients as well as could the specialists at Albuquerque. He noted that the success of this program has provided impetus for expanding it to other areas, including childhood obesity. “Training primary care physicians and other providers to provide care is the way to go in tackling this problem,” he asserted, “rather than keeping everything within the ivory tower, which is what has been taking place so far.”

Kushner also mentioned another competency initiative, an intersociety Obesity Medical Education Collaborative, which has developed competencies, benchmarks, and entrustable professional activities for obesity care. “We are trying to make this camera ready for the schools,” he explained, “so that if they want in-patient care or knowledge- or system-based care,

they will have competencies with benchmarks already developed that they could use within their curriculum.” He added that if clinicians associated with the Obesity Medicine Association had academic affiliations, they, too, could have leverage to work with the education committee.

8

Payment Considerations

Highlights from the Presentations of Individual Speakers

- According to a large-scale survey, 70 percent of employers believe the wellness programs they provide are valuable to employees, but only 17 percent of people with obesity believe their employers' wellness programs are effective for them. (Parry)
- Moving beyond medical and pharmacy costs to a broader consideration of costs, including those of absenteeism and lost productivity, can help employers recognize the full costs of obesity to their companies. (Parry)
- Interventions that are convenient, credible, and supported by evidence can increase engagement and results. (Williams)
- State Medicaid agencies are highly flexible and variable in how they choose to cover and report on obesity prevention and treatment services for children and adults. (Stockmann)
- Coverage of services does not automatically lead to utilization of services or imply a particular quality of care. (Stockmann)

The Patient Protection and Affordable Care Act (ACA) contains a mandate for coverage of obesity treatment, corresponding to the recommendations of the U.S. Preventive Services Task Force for screening of all

adults and children aged 6 and older for obesity.¹ However, coverage is highly variable among states (National Conference of State Legislatures, 2017), observed Don Bradley, associate consulting professor, Department of Community and Family Medicine, Duke University, and moderator of the panel on payment considerations. This variability also extends to Medicaid coverage for obesity services, he noted. The essential health benefits from the ACA apply to Medicaid programs, but Medicaid services have been expanded in some states and not in others (Kaiser Family Foundation, 2017). Coverage for obesity-related nutritional consult services, obesity-related disease management and education services, and obesity medications are similarly variable and partial across states, Bradley observed. However, he reported, almost all the states cover bariatric surgery through Medicaid (STOP Obesity Alliance, 2014). He listed a number of considerations that payers take into account in making coverage decisions: (1) customer demand/preference for a benefit or service; (2) cost (especially costs that are as low as possible and predictable); (3) evidence for effectiveness and efficiency; (4) deliverable quality outcomes, especially on metrics of the Centers for Medicare & Medicaid Services (CMS) and the National Committee for Quality Assurance; (5) network for delivery; (6) customer experiences and satisfaction; (7) ease of administration; (8) compliance/mandates/essential health benefits; (9) risk (including legal, financial, regulatory, public relations, and network forms of risk); and (10) profitability/margin. Three speakers followed Bradley's introduction of the panel, addressing a number of these topics.

THE EMPLOYER'S PERSPECTIVE

Thomas Parry, president emeritus and co-founder of the Integrated Benefits Institute, began by observing that employers represent the single largest segment providing health care coverage (see Figure 8-1). For them, he said, obesity coverage is a challenge. Parry is a member of an advisory group for a study being supported by Novo Nordisk—the ACTION Study—that includes in its design surveys of 3,000 people with obesity, 600 providers and practitioners of care for obesity patients, and 150 employers. According to these surveys, two-thirds of employers believe obesity is a disease, which is “a very important starting point if you are going to talk to employers about coverage,” asserted Parry. Second, he said, 85 percent of employers agree

¹ Adults: <https://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/obesity-in-adults-screening-and-management> (accessed November 14, 2017); children: <https://www.uspreventiveservicestaskforce.org/Page/Document/Recommendation-StatementFinal/obesity-in-children-and-adolescents-screening> (accessed November 14, 2017).

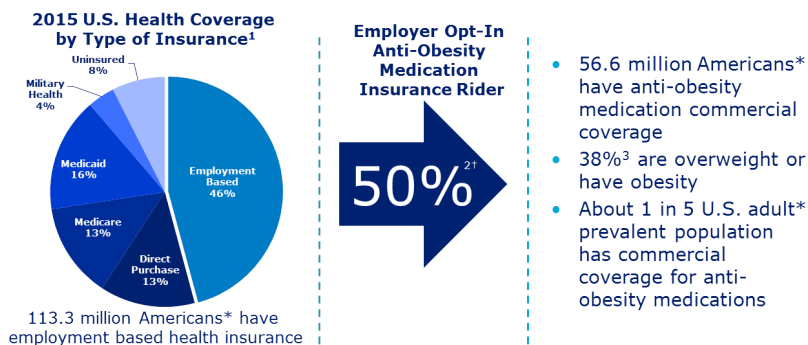


FIGURE 8-1 Coverage of obesity medication in the United States.

NOTES: *Adults 18 years and older; † Assumption: percentage of employer opt-in is reflective of the percentage of individuals covered.

SOURCES: Presented by Thomas Parry on April 6, 2017 (data from ¹Barnett and Vornovitsky, 2016; ²Benfield Research, EMI Trends, 2014; ³Ogden et al., 2014). Reprinted with permission from Novo Nordisk.

that a 10 percent weight loss would be extremely beneficial to employees with obesity. Third, he reported, 70 percent of employers believe that the wellness programs they provide are valuable to employees; however, only 17 percent of people with obesity believe their employers' wellness programs are effective for them (Kaplan et al., 2016).

Parry believes this last point represents a key challenge for both people with obesity and employers. Employers tend to think about wellness in terms of eating habits, gym memberships, exercise, and similar activities, he noted, whereas people with obesity are looking for a broader and holistic approach to wellness.

Employers are greatly concerned about the costs of care, Parry observed (Kaplan et al., 2016). For example, he said, they are getting ready for an onslaught of costs around specialty pharmaceuticals. "If we don't effectively deal with the question of cost of coverage," he argued, "then we will never get the employer's attention about this issue."

Parry also has worked with Ronald Kessler of Harvard Medical School to analyze data from a research-validated self-reporting tool called the Work and Health Performance Questionnaire (HPQ), which has generated data on about 100,000 employees. According to these data, Parry reported, about two-thirds of employees with obesity have never been treated. "This represents a critical challenge for employers," he asserted. "As long as employers think of this as a cost, then this idea of 'we should increase treat-

ment penetration' is a real challenge. Because what, of course, happens to cost when more people get care? In the short term, costs increase."

The answer to this dilemma, Parry argued, is to move beyond medical and pharmaceutical expenses to a broader consideration of costs. He reported that according to a recent study of 10 employers for which the research team integrated medical and pharmacological claims data with absence and performance data from the HPQ, the costs of absences from work and lost productivity because of poor health exceed medical and pharmacy costs for a wide range of health conditions, including obesity (Loeppke et al., 2009). "We have to help employers understand that the window into what is important cannot be gleaned from only looking at medical and pharmacy claims data," said Parry. "Other sources of information have to be part of that view." Absenteeism and lost productivity are particularly germane to chief financial officers, CEOs, and other people who are running businesses, he asserted. He argued that using data to demonstrate that good care is going to lead to better outcomes that drive business performance, including costs, will produce "a conversation that the employers are willing to listen to."

A PRIVATE PAYER'S PERSPECTIVE

California traditionally carries a lower population health burden than many other states, noted Bryce Williams, vice president for well-being at BlueShield of California, with prevalence rates for obesity, smoking, and comorbidities all being lower than the national average. However, he said, the difference "between one in three Americans and one in four Californians [having obesity] is really a distinction without a difference," he said. "There is still a problem."

Williams observed that with the sixth-largest economy in the world, California has populations and communities with widely varying levels of health, noting that a driver heading east from the Pacific Ocean will soon encounter communities very similar to communities in other parts of the United States. BlueShield of California recognizes "that we have to be a part of the solution for geographic, ethnic, and socioeconomic health disparities," he said.

Williams explained that the company follows the compliance guidelines of the ACA, offering zero-cost-shared preventive member benefits in obesity screening and counseling. "Our provider community has come a long way in being more effective at doing obesity screening," he reported. "Counseling is another matter," he acknowledged. "Historically, this is a chronically underutilized benefit, for a variety of reasons." Providers tend to be confused about what the benefit is, he noted, especially when commercial health plans put a slightly different twist on it, and they do not

necessarily have the referral networks for patients that need such services. They often report that they are still uncomfortable talking about obesity with their patients, he said, and “when they do, they don’t feel like they do a great job of it.”

Health plan members also are confused, Williams added, with statements being complex and difficult to interpret. Moreover, he observed, members generally do not feel comfortable talking with their providers about obesity. “Coverage doesn’t necessarily mandate success in this space,” he said.

With regard to treatment, Williams continued, BlueShield of California covers a number of pharmaceutical interventions for obesity based on eligibility criteria, prior authorization, and other criteria. However, “pharmacy can get really confusing,” he suggested. “There is brand. There is generic. There is tiering. There are copays. There are 8 million things that make pharmaceutical fills complex. My guess is [that] a good number of Californians figure it is easier to go to a private weight loss clinic and get a prescription for their medications that way. It is more convenient than dealing with the health plan.” Williams added that the company also covers bariatric surgery with certain conditions, and it works with the Blue Distinction Centers network, which comprises centers of excellence.

BlueShield of California is not in the business of delivering clinical services—it is a health plan, Williams clarified. However, he added, it is interested in providing care in the area of lifestyle medicine. “We believe that, in the area of diet and lifestyle, the market solution isn’t out there yet,” he explained. “We are not saying it is anybody’s fault. It is not the providers’ fault. It is not the health and wellness industry’s fault. But we believe there is room to actually go out and do that.” He observed that nutrition, exercise, smoking, insufficient sleep, and chronic diseases such as diabetes all are linked to obesity. Proven intensive lifestyle interventions affect these risk factors and outcomes, but, he asserted, they are not having a large enough influence. “There is a big discrepancy between what the research literature is showing and what is actually happening with our consumers, with our members, with average Americans,” he said.

Interventions that work need to be convenient, Williams suggested. For example, brick and mortar programs need to be accessible, close to work and home, and easy to get into and out of (e.g., easy parking). Williams added that convenience often also means embracing digital technologies such as phones, pads, fitness trackers, scales, blood pressure cuffs, and other individual technologies. “We have to connect people either in person or digitally to help build support networks so people can succeed,” he argued. Interventions also need to be credible and supported by evidence, he asserted. For example, he cited a physical activity initiative called the Walkadoo program, a mobile-based physical activity platform integrated

with all the popular fitness trackers (Poirier et al., 2016). Data from the trackers are used to shape and deliver personalized goals via text or email and connect to support networks. According to Williams, “It engages the consumer and provides personalized, contextualized data for you, not just 10,000 steps a day.” According to one study, he noted, more than 75 percent of participants were still engaged after 90 days, and physical activity showed a 20 percent improvement (or more than 1,000 steps per day).

Williams reported that BlueShield of California also has embraced the Centers for Disease Control and Prevention’s Diabetes Prevention Program, which it has rolled out statewide to all its members, although the program is still just beginning. With 600 community partners in 43 of California’s 53 counties, he explained, the program provides multiple digital options, including online, smartphone, and text, since people want to engage in different ways. It uses fitness trackers and wireless scales to engage people and gather data that document the program outcomes.

“We believe there is a right solution for anybody,” Williams said in closing. “This is going to be multifactorial and multidisciplinary. We firmly believe in raising the game on diet and lifestyle interventions that are clinically effective, cost-effective, come with virtually no side effects and no risks—and we want to make it free to everybody.”

A PUBLIC PAYER’S PERSPECTIVE

Medicaid is the largest single payer of health care for people in the United States, covering more than 70 million children and adults. Medicaid and the Children’s Health Insurance Program (CHIP) can therefore play a key role in increasing access to obesity prevention and treatment services, asserted Deirdra Stockmann, lead for secondary prevention in the Division of Quality and Health Outcomes, Center for Medicaid and CHIP Services, CMS. She described the potential of Medicaid and CHIP to cover obesity prevention and treatment services.

Medicaid is a federal–state partnership that allows states flexibility to design programs that address their needs and reflect their priorities, Stockmann explained, which results in considerable variation across states in what obesity-related services, including obesity treatments, are covered for children and adults, and reflects the variability in the statutory authorities and regulations under which those services are defined. She highlighted some of the most common ways states are choosing to cover obesity prevention and treatment services in their Medicaid and CHIP programs.

In terms of coverage for children, through Medicaid’s Early and Periodic Screening, Diagnostic, and Treatment (EPSDT) benefit, Medicaid-eligible children under age 21 are assured coverage of preventive and comprehensive health services, noted Stockmann. She explained that the

EPSDT benefit includes screening, vision services, dental services, hearing services, and all services necessary to ameliorate health conditions discovered through the screenings that are covered. Under the screening component of EPSDT, she continued, state Medicaid programs are responsible for ensuring that children receive periodic physical examinations, including well visits, complete health and developmental histories, and health education. She added that screening for obesity falls under both the screening component of EPSDT and health education, which serves as an opportunity for a provider to discuss health concerns such as healthy weight and nutrition with a child, parent, guardian, and family. In addition, she noted, any medical service or treatment determined to be medically necessary for a child, such as nutritional assessments and counseling, medications, or surgery, would be available through the Medicaid EPSDT benefit.

Medicaid programs differ more from state to state on coverage of obesity-related services for adults noted Stockmann. She explained that federal Medicaid law requires states to cover certain mandatory benefit categories, such as hospital services, and allows them to choose whether to cover other, optional benefit categories, such as diagnostic screening and preventive services. She added that states can include obesity treatment services under a number of different benefit categories, required or optional, depending on how they have structured their Medicaid plan.

Stockmann described a newer and important state plan option for providing obesity treatment to both children and adults—the use of health homes, which can coordinate care for enrollees with chronic conditions, including overweight and obesity. She explained that health homes operate with a whole-person philosophy, whereby providers integrate and coordinate all primary, acute, and behavioral health care services, as well as long-term services and supports, to treat a whole person. Health home services include comprehensive care management, care coordination, health promotion, patient and family support, and referral to community and social support services.

As an example of this approach, Stockmann cited Missouri, which has established health homes for a number of different conditions and recently made a change so that obesity qualifies as a stand-alone condition, rather than people being required to have two or more chronic conditions. “We are really looking forward to seeing what benefits [are included] and the outcomes and performance of those health homes,” she said.

Another option for states to improve access to obesity care and reduce cost described by Stockmann is the Preventive Services Provider Rule. She explained that in 2014, CMS revised regulations to accurately reflect the statutory provision that states have the option of allowing preventive services to be provided by practitioners other than physicians or licensed practitioners as long as a physician or licensed practitioner recommends

the service. She observed that this rule could be used to provide services to people who have obesity or are overweight and potentially lower costs. In general, she noted, if states want to make changes to the obesity services provided in their Medicaid and CHIP programs, they need to consider their state plan, context, and priorities and work with CMS to identify the best authorities under which to make the changes. “It does and will continue to look different from state to state,” she said.

Coverage of services does not automatically lead to utilization of services or imply a particular quality of care, Stockmann emphasized. To improve this situation, she suggested, states could consider how to work with their Medicaid managed care organizations and their health plans as partners to increase the delivery and quality of obesity treatment and services. As an example, she suggested that managed care organizations could conduct performance improvement projects as part of their Medicaid contracts, including obesity prevention and treatment as an important focus. She also observed that states could incorporate pay-for-performance arrangements that include metrics related to obesity care into their managed care contracts. She added that CMS has core sets of measures for children and adults enrolled in Medicaid and CHIP that include a measure for body mass index (BMI) assessment. “While I am well aware that it is a process measure with many limitations,” she said, “we do encourage states to consider including it as part of a set of metrics that they collect and use to drive improvement for the quality of care delivered in their states.” Adult measures also exist for screening and managing diabetes and managing blood pressure.

Stockmann stressed that beneficiary and provider outreach is critical to improving the delivery of care, particularly behavioral interventions and chronic disease management interventions and services. She noted that in 2015, CMS released a set of free and customizable materials, called Living Well, to help states promote their preventive services. Posters, fact sheets, and an image library can be adapted to states’ needs and cobranded with the logos that state residents recognize.

Finally, Stockmann emphasized that collaboration across state agencies and with other public health partners is essential to making progress on any chronic disease prevention and management goal. For example, she observed, many different organizations and states are working together on diabetes prevention and management from different angles and making progress. “There may be effective ways to link some of the momentum and efforts around diabetes prevention and management with obesity treatment to have a greater impact,” she suggested. For example, she noted in response to a question, collaborations with the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) could offer a way to “meet people where they are.”

9

Policy Considerations

Highlights from the Presentations of Individual Speakers

- The impact obesity is having on federal and state budgets and the social safety net and on access to quality care has spurred bipartisan interest in the issue. (Gallivan)
- The Treat and Reduce Obesity Act is an example of proposed legislation that has broad bipartisan support. (Sha)
- The Patient Protection and Affordable Care Act has improved opportunities for screening and treatment of obesity under Medicare, private plans, and Medicaid. The impact and uptake of this policy have been limited to date. (Parekh)
- Legislators are interested in obesity issues, but a lack of champions with a consistent message on obesity prevention and treatment and issues of bias associated with obesity tend to keep obesity from rising to the top of the policy agenda. (Nadglowski)

The workshop took place during a time of heightened debate around health policy with respect to the Patient Protection and Affordable Care Act (ACA) and other health-related legislation, noted Lisel Loy, vice president of programs for the Bipartisan Policy Center and moderator of the panel on policy considerations. A panel of four experts, including two Capitol Hill

staffers and two advocates for obesity initiatives, reflected on the current scene and on the potential for progress.

BIPARTISAN OPPORTUNITIES

The ongoing activity in the health policy world “presents a lot of opportunities to move forward on legislation, in particular in a bipartisan manner,” said Matt Gallivan, health policy advisor for Senator Bill Cassidy, a Republican from Louisiana who is a physician and worked in the charity care system in Louisiana for 25 years. Gallivan explained that beyond the debate over the ACA, more legislators are coming to understand the impact that patients with multiple chronic conditions are having on the federal budget, state budgets, and the social safety net, and the importance of access to high-quality care for improving patient outcomes. “There is a bipartisan recognition of that having to be an area of focus, and a large driver of that is patients combating obesity,” he said.

Gallivan cited the Treat and Reduce Obesity Act,¹ which is focused on increasing coverage, particularly in the Medicare space, as one example of proposed legislation that has attracted bipartisan support. He added that the Senate Finance Committee, of which Senator Cassidy is a member, also has done work on chronic care. “There is some good bipartisan synergy going on,” he asserted, “despite the larger, frankly more partisan conversations around the ACA.”

Gallivan pointed out that Congress needs input on innovative care delivery models and the barriers faced in delivering care, such as reimbursement issues, regulatory issues, lack of coverage, and patient engagement. “We have to have serious conversations about these issues so that we can get at the cost drivers and focus on the growing patient group that is driving a lot of the higher costs and worse outcomes,” he suggested.

Lynn Sha, senior health policy advisor for Senator Thomas Carper of Delaware, also emphasized the bipartisan opportunities that exist in health policy. She observed that Delaware is a collegial state in which people work across party lines. “There is a lot of effort to work together in a practical way that is fiscally responsible,” she explained, “but also trying to make sure that the most vulnerable people in our communities are not left behind.” She argued that the same approach can work in Washington, DC. “There actually are a lot of areas of agreement, a lot of areas where people feel like we need to work together to get something done. . . . Please don’t be too discouraged by what you hear [in the news]. There is a lot of

¹Treat and Reduce Obesity Act of 2017 [HR.1953/S.830], <https://www.congress.gov/bill/115th-congress/house-bill/1953> (accessed November 14, 2017); <https://www.congress.gov/bill/115th-congress/senate-bill/830> (accessed November 14, 2017).

effort behind the scenes to try to come together on some of these major priorities.”

Obesity is one of these priorities, Sha added. She noted that the Treat and Reduce Obesity Act, which had more than 150 cosponsors in the House and 10 in the Senate at the time of the workshop, has always been bipartisan. She cited the requirement under the ACA that people have access to preventive treatments (including counseling for weight reduction) without cost sharing and the Diabetes Prevention Program as examples of successful approaches, although their uptake has to date been low. “We collectively have to figure out how we get to a better place on those kind of things,” she argued. One important step will be to develop better measures, she suggested, because “you can’t manage what you can’t measure.” She gave as an example better measures of how many people are receiving counseling under Medicare and Medicaid, which would provide a baseline against which to improve.

Sha also asserted that more thought needs to be given to how to reverse negative trends in nutrition, physical activity, and other drivers of obesity. “Everyone agrees we have to do something on obesity,” she said. “What is less clear is how we pay for it.” She noted that many Senate committees are involved in the financing of health care, and they all have common interests in reducing obesity. “This is an area where there is a lot of room for consensus and a lot of room to grow,” she suggested.

Sha reminded participants of the value of referring to “one of the few bright lights that we have seen”—the plateauing of childhood obesity. When her children come home talking about whether to eat snap peas raw or cooked, she is impressed that “they actually know what a snap pea is.” Everyone, whether Democrat or Republican, can agree on the need to have access to and eat more fruits and vegetables, she observed. “That is the kind of winning message that we should all try to work toward,” she said.

Anand Parekh, chief medical advisor for the Bipartisan Policy Center, asserted that the greatest recent improvement in obesity treatment was the coverage of 20 million more Americans by the ACA, including 10 million Americans covered through the Medicaid expansion provision. In addition, he noted, Section 2713 of the ACA required that private plans cover U.S. Preventive Services Task Force recommendations with grades of A or B, including obesity screening and counseling for children and adults, without cost sharing. The ACA also extended this policy to Medicare beneficiaries and the Medicaid expansion population (see Chapter 8 for further information). Another major impact of the act, Parekh observed, was through its Community Transformation Grants under the Prevention and Public Health Fund, which led to investments in communities across the country to help prevent chronic diseases such as obesity, diabetes, and heart disease. He noted that although relatively few data have been generated regarding

the impact of the ACA on obesity, some progress is being made in improving care delivery. As an example, he cited the creation of the Center for Medicare and Medicaid Innovation, which has supported the development and testing of innovative health care payment and service delivery models leading to expansion of the Diabetes Prevention Program in Medicare. He added that obesity screening is now part of most alternative payment models as a process quality measure.

Parekh emphasized that approaches to obesity must involve both the clinical side and the community side, and community initiatives will likely provide the greatest return on investment. He suggested that one way to incentivize such initiatives, which could reinforce reforms in medical care and policy systems and environmental change, would be to offer communities matching grants and prioritize disadvantaged communities so that existing disparities do not increase.

Parekh reported that the Bipartisan Policy Center has promoted the idea of a secretarial task force on obesity that would focus on prevention as well as treatment. He observed that the Obama administration made major progress on obesity with the ACA, the First Lady's Let's Move Initiative, and actions by the Centers for Disease Control and Prevention (CDC). "But," he added, "we have never had a high-level secretarial task force with agency heads focused on prevention and treatment where one could coordinate the activities of CDC, CMS [the Centers for Medicare & Medicaid Services], and all the federal agencies."

Parekh described another proposal to use the quality measures developed by CMS to pursue delivery and payment reform. Measures for obesity screening are "great," he suggested, but outcome measures for quality also are needed. "We need to put providers, hospitals, and health care systems on the hook for the prevalence of obesity amongst their patient population, and/or for percentage weight reduction as well," he asserted. "It is not good enough just to screen. Once we do that, once we put providers on the hook, then all of the community evidence-based treatments that you have talked about today can be further integrated into the health care system."

Echoing a point made by the other speakers, Parekh observed that obesity policy should not be a partisan issue. "Both Republicans and Democrats are equally invested in this," he asserted. At the same time, he said, policy makers need to hear on a continual basis that obesity is a critical issue: "Policy makers need to understand that there is no bigger health policy issue today than obesity. Obesity impacts cost, it impacts disability, it impacts chronic diseases in ways that really no other [health concern], whether a chronic condition or a comorbidity, does. It is fine talking about the financing of the health care system. It is fine talking about delivery of the health care system. But if you don't tackle obesity—which is, with to-

bacco, the leading risk factor driving chronic conditions—we are not going to solve any of our issues.”

CREATING CHAMPIONS FOR OBESITY TREATMENT

The Obesity Action Coalition is a 55,000-member patient advocacy organization made up primarily of people with obesity. “Ninety percent of them have obesity, just like I do,” said Joseph Nadglowski, the coalition’s president and CEO. “I have spent the last 12 years—12 years this week—working on trying to influence public policy around obesity, primarily on behalf of those who already have obesity.”

The Obesity Action Coalition has been working to pass the Treat and Reduce Obesity Act, which Nadglowski termed “important legislation.” The act applies to Medicare, he noted, but private insurers often follow what Medicare does. “It will not only benefit our senior citizens and those who are disabled,” he said. “It should benefit us all if we pass that legislation.”

Nadglowski, too, stressed that obesity is a bipartisan issue. “In my 12 years of doing this,” he said, “I have had equal success working with Democrats and Republicans at both the state and the federal level.” For that reason, he added, talking with elected officials about obesity is relatively easy, because “you are wearing a white cape when you go in there—you are the superhero.”

Nadglowski cited as a major challenge is that obesity prevention and treatment does not have a large number of champions among policy makers. “Every legislator I have ever talked to is interested in addressing obesity,” he said, “but we have had trouble getting them to make it that number one, number two, or number three issue. . . . Unless it rises to that level, it is hard to move something forward.”

Part of the reason for this lack of policy emphasis is bias, Nadglowski suggested. Policy makers assume that people should deal with the issue on their own, he observed, not through policy initiatives. He argued that even legislators who are affected by obesity themselves are less likely to step forward to become a champion of this disease because of bias, self-blame, and shame.

Nadglowski also placed part of the blame for the lack of champions on the communities that work on obesity. “We go forward with these very diverse messages,” he said, “and we get caught up in our areas of expertise or our areas of focus. I am the food guy or I am the exercise guy or I am the environment guy or I am the treatment guy or I am the drug guy or I am the surgery guy. We need to go forward with a universal approach to address this. It is not one thing that is going to solve obesity. It is all of those things.”

According to Nadglowski, the main benefit of the ACA to people with obesity was that it prevented them from being denied coverage because their obesity was preexisting. It also required that particular services be covered, but that has happened to a far lesser extent, he observed. “There is a big difference between having the law written and then having the rules enforced,” he noted. In some places, for example, bariatric surgery is considered essential, but that is not the case in other places. “We have the haves and have-nots when it comes to medical coverage,” he asserted.

Nadglowski emphasized the importance of dealing with what he called the blame and shame issue. “Many of us will say, ‘I will go talk to my doctor about my weight after I lose 10 pounds,’” he observed. “We have to stop that. We have to make it so that people realize that they are not solely to blame for this. We have options available for them.”

Nadglowski emphasized that “when we turn this into real people, it is a lot easier for those legislators to listen.” He argued that patients are better than physicians at convincing a legislator that obesity is a serious issue. “Many of you, through the programs you run, have wonderful stories,” he said. “Bring those folks with you to the Hill. That is what will change someone’s mind.” He also emphasized the importance of language: “I am not obese. I have obesity. It is important. Obese is an identity. Don’t make me think that that is all I am, that I am obese. I am a person who has a condition. Subtle changes like that will make a big difference in the long run.” Refusing to use the word “obese” was not easy, he noted. “It took me 2 years of stuttering every time I would say it—‘oh, I mean person with obesity.’ I am challenging you to stutter.”

Changing public perceptions is critical, Nadglowski asserted. “We can work with the policy makers all we want,” he said. “Until the public comes out and demands this, it is going to be hard to make this a number one or number two issue. [It requires] reaching out to folks and saying, ‘Hey, it is okay that you have obesity. This is a disease. Let’s deal with it. [And] it is okay for you to step up and ask for the help you need.’”

NEW INITIATIVES

A prominent topic of discussion during the question-and-answer session was the need for new initiatives to heighten the visibility of obesity prevention and treatment. Loy noted that new initiatives often achieve more change when they intersect with ongoing work, such as the Senate’s Chronic Care Working Group: “We have looked hard at existing opportunities where members are already engaged on issues that they care about that may or may not carry the label obesity, but that would enable them to engage on these issues.”

Parekh observed that the creation of a secretarial task force “only gets

you so far,” but it is a step in the right direction. One thing such a task force could do, he suggested, is coordinate implementation across agencies, because having the right policy is one thing, but implementation is another.

Gallivan agreed that coordination across agencies is important, as is focusing on obesity as an underlying contributor to chronic diseases. Also, he argued, giving Medicaid and other federal programs more flexibility so that states can experiment with opportunities to implement targeted population health management could lead to important innovations. As an example, he cited the National Institutes of Health’s Brain Research through Advancing Innovative Neurotechnologies® (BRAIN) Initiative, which brought together groups focused on different neurological diseases because advances could help them all.

Sha pointed out that pulling people together to address obesity is a great idea but is not sufficient in and of itself. “We need more legislation,” she asserted. “We need more people engaged. We need more champions.” In comparison with a secretarial task force, she added, congressional commissions can have a greater impact, especially because “Congress probably needs some advice on how we get at all of these broader issues.” That, she suggested, would help integrate consideration of obesity “into every single piece of our policy-making apparatus and policy execution and implementation.”

10

Involving Communities and Individuals

Highlights from the Presentation of Marsha Schofield

- Spreading and scaling obesity treatment requires involving communities and not just individuals.
- Communities have unique needs but also commonalities, such as a need to reduce disparities.
- Successful obesity treatment requires reaching individuals with the right approach, the right provider, and the right message delivered with the right language at the right time.

In the final panel of the workshop, Marsha Schofield, senior director for governance and nutrition services coverage, Academy of Nutrition and Dietetics, closed the discussion by emphasizing the importance of communities and person-centered care in the treatment of obesity. “How do we take wonderfully stimulating conversations that happen at forums like this and do something with it—in the communities?” she asked.

The first task, Schofield said, is to involve communities, not just individuals. “It is essential,” she asserted, “when we want to spread and we want to scale [an intervention], that we are inclusive.” The people who need help and support are a very diverse population, she observed, and one solution will not work for all. “We have to make sure,” she said, “as we work in communities to scale these things and spread them, that we have different options” available. Thus, she elaborated, a diabetes prevention

program might help one person; a Weight Watchers program another; and interprofessional, multicomponent therapy another. “We need options,” she said, even within each intervention, such as individual therapy, group therapy, and technology-based approaches. Working with communities requires time, conversations, relationship building, and trust, she noted, but “it is essential. It is more than buy-in to a concept. It is building a design team that is inclusive of all the parties.”

The variety of needs and communities provides ample opportunities to be creative, Schofield observed. In this way, she suggested, solutions can be based on the unique needs of each community. At the same time, she added, communities have commonalities that need to be considered in spreading and scaling up approaches, such as a need to reduce disparities. “There are places where people go to school,” she said. “There are places where people get some kind of connection with the health care system. There is a place of worship. There is a place where people get their food. We can bring our approaches into those places. . . . We can tap into those resources and partner with those groups.”

Schofield observed that some point to a lack of providers as a limit on obesity treatment, and others point to challenges in the payment and delivery systems for supporting treatment, but she offered another perspective. At any given moment, she said, only a subset of a population is ready to access treatment, and this casts the supply–demand balance in a different and perhaps more manageable light.

Schofield added that although the task of scaling and spreading an intervention can seem overwhelming when there is a significant need, the concept of “eating the elephant one bite at a time,” can be helpful. That is, she suggested, start with one segment of the population or work with one payer to pilot a program, acknowledging at the start that the program will not be addressing everything for everyone. She suggested these “small bites” will get infrastructure in place as scale-up is initiated.

Schofield also emphasized the need to maintain integrity as obesity treatment approaches are spread and scaled up. As programs are adapted for individuals and communities, she observed, practitioners can be tempted to cut corners to create a more favorable return on investment. “I caution us not to throw out all of the elements that are the keys to the success that we know” has occurred, she said. She suggested that using trained experts and evidence-based interventions can maintain the integrity of obesity treatments.

At the same time, Schofield noted, obesity treatment needs to be oriented to the needs of individuals. As with community involvement, she observed, that means getting the people who will be served involved in the design of implementation. “We may be the experts on what works,” she

said, “but we need those people, those patients, to be our experts on how do we implement it.”

Schofield closed by asserting that successful obesity treatment requires reaching individuals with the right approach, the right provider, and the right message delivered with the right language at the right time. “There are lots of things to get right,” she said. “Our challenge is to think about the matchmaking between all of those things, and as we spread and scale, trying to get all of those things right. It is complex, but it is doable.”

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A

Workshop Agenda

The Challenge of Treating Obesity and Overweight: Learning What Works and Making it Happen

Roundtable on Obesity Solutions

April 6, 2017

National Academy of Sciences Building
2101 Constitution Avenue, NW
Washington, DC
Auditorium

Workshop Objective: Explore what is known about current obesity treatment approaches and the challenges involved in implementing them.

8:30 AM **Welcome and Setting the Stage**, Bill Purcell, J.D., Chair,
Roundtable on Obesity Solutions

TREATMENT: WHAT WORKS?

Facilitator: Don Bradley, M.D., MHS-CL, Duke University

8:45 AM **Adults**
Susan Yanovski, M.D., National Institute of Diabetes and
Digestive and Kidney Diseases, National Institutes of
Health

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THE CHALLENGE OF TREATING OBESITY AND OVERWEIGHT

9:15 AM

Children and Adolescents

Ihuoma Eneli, M.D., M.S., FAAP, American Academy of Pediatrics Institute for Healthy Childhood Weight & Nationwide Children's Hospital

9:45 AM

Emerging Opportunities

Steven Heymsfield, M.D., Pennington Biomedical Research Center, Louisiana State University

10:15 AM

BREAK

TREATING SEVERE OBESITY

10:30 AM

Adults

Facilitator: Adam Tsai, M.D., M.S.C.E., FACP, Kaiser Permanente

Bruce Wolfe, M.D., FACS, FASMB, Oregon Health & Science University

Louis J. Aronne, M.D., FACP, DABOM, Weill-Cornell Medical College

Nikki Massie, Patient Advocate

11:15 AM

Children

Facilitator: Ihuoma Eneli, M.D., M.S., FAAP, American Academy of Pediatrics Institute for Healthy Childhood Weight and Nationwide Children's Hospital

Nikki Highfield, Parent

Marc Michalsky, M.D., Nationwide Children's Hospital

Susan J. Woolford, M.D., M.P.H., University of Michigan

12:00 PM

LUNCH

1:00 PM

WORKFORCE AND TRAINING

Facilitator: Bill Dietz, M.D., Ph.D., The George Washington University

Goutham Rao, M.D., FAHA, Case Western Reserve University

Robert Kushner, M.D., Northwestern University

Linda Gigliotti, M.S., R.D.N., CDE, Wellness Consultant at Diocese of Orange

- 1:45 PM **PAYMENT CONSIDERATIONS**
Facilitator: Don Bradley, M.D., MHS-CL, Duke University
- Tom Parry, Ph.D., Integrated Benefits Institute
Bryce Williams, M.S., Blue Shield of California
Deirdra Stockmann, Ph.D., M.U.P., Centers for Medicare &
Medicaid Services
- 2:30 PM **POLICY CONSIDERATIONS**
Facilitator: Lisel Loy, J.D., Bipartisan Policy Center
- Joseph Nadglowski, Obesity Action Coalition
Anand Parekh, M.D., M.P.H., Bipartisan Policy Center
Matthew Gallivan, Health Policy Advisor, Senator Bill
Cassidy (R-LA)
Lynn Sha, Senior Health Policy Advisor, Senator Thomas
Carper (D-DE)
- 3:15 PM **BREAK**
- 3:30 PM **MOVING FORWARD**
Facilitator: Theodore Kyle, R.Ph., M.B.A., ConscienHealth
- Marsha Schofield, M.S., R.D., L.D., FAND, Academy of
Nutrition and Dietetics
Gary Bennett, Ph.D., Duke University
- 4:00 PM **ADJOURN**

B

Acronyms and Abbreviations

ACA	Patient Protection and Affordable Care Act
ACC	American College of Cardiology
ACTION	Awareness, Care and Treatment In Obesity Management Study
AHA	American Heart Association
AMA	American Medical Association
AND	Academy of Nutrition and Dietetics
BMI	body mass index
BRAIN Initiative	Brain Research through Advancing Innovative Neurotechnologies® Initiative
CDC	Centers for Disease Control and Prevention
CHIP	Children's Health Insurance Program
CMS	Centers for Medicare & Medicaid Services
CSOWM	Certified Specialist in Obesity and Weight Management
DASH	Dietary Approaches to Stop Hypertension
DSE	Diabetes Support and Education
EPA	entrustable professional activity
EPSDT	Early and Periodic Screening, Diagnosis, and Treatment
ER	extended release
FDA	Food and Drug Administration

GLP-1 receptor	glucagon-like peptide 1 receptor
HDL	high-density lipoprotein
HPQ	Health Performance Questionnaire
ILI	intensive lifestyle intervention
LABS	Longitudinal Assessment of Bariatric Surgery
LDL	low-density lipoprotein
Look AHEAD	Look Action for Health in Diabetes
MC4 receptor	melanocortin 4 receptor
MEND	Mind, Exercise, Nutrition, Do It!
NHANES	National Health and Nutrition Examination Survey
NIH	National Institutes of Health
SGLT2 receptor	sodium-glucose co-transporter 2 receptor
SNAC	sodium N-[8-(2-hydroxybenzoyl)amino]caprylate
SSRI	selective serotonin reuptake inhibitor
TOS	The Obesity Society
USMLE	United States Medical Licensing Examination
USPSTF	U.S. Preventive Services Task Force
WIC	Special Supplemental Nutrition Program for Women, Infants, and Children
YMCA	Young Men's Christian Association

C

Speaker and Facilitator Biographies

Louis J. Aronne, M.D., FACP, DABOM, is the Sanford I. Weill professor of metabolic research at Weill-Cornell Medicine, where he directs the Comprehensive Weight Control Center. He is chairman of the American Board of Obesity Medicine and a past president of The Obesity Society (TOS). He edited the National Institutes of Health's *Practical Guide to Obesity Treatment* and has authored more than 90 papers and book chapters on obesity. Dr. Aronne has won several awards, including the 2015 Atkinson-Stern Award for Distinguished Public Service from TOS. He is the CEO of BMIQ, a free cloud-based weight management system for health care providers.

Gary G. Bennett, Ph.D., is the Bishop-MacDermott Family professor of psychology and neuroscience, global health, and medicine at Duke University. He directs the Duke Global Digital Health Science Center and the Duke Obesity Prevention Program. Dr. Bennett is president-elect of the Society of Behavioral Medicine. His research program designs, tests, and disseminates digital obesity treatments for medically vulnerable patients in primary care practice. Dr. Bennett developed the interactive obesity treatment approach (iOTA), which has been evaluated in several trials, both domestically and abroad. His recent work has demonstrated the effectiveness of coach-led, digital health weight loss and hypertension control interventions delivered via web, smartphone, and interactive voice response systems. His intervention trials in medically vulnerable communities have been the focus of numerous invited addresses for professional and lay audiences alike. He has authored more than 125 scientific papers, and his research program has been supported continuously by the National Institutes of Health (NIH).

Dr. Bennett participates actively in efforts to improve population health and reduce health disparities. He has served on numerous NIH committees and editorial boards and actively advises several health care and health technology organizations. He is a member of the American Psychological Association's obesity treatment guidelines panel and works with committees at the Health and Medicine Division of the National Academies of Sciences, Engineering, and Medicine; the American Heart Association; and the American Council on Exercise to reduce Americans' high rates of physical inactivity and obesity. He also co-founded two digital health startups: Crimson Health Solutions (acquired by Health Dialog in 2007) and Scale Down. Prior to joining Duke in 2009, Dr. Bennett served on the faculties of the Harvard School of Public Health and the Dana-Farber Cancer Institute. He earned a bachelor's degree at Morehouse College and a Ph.D. in clinical health psychology at Duke University, and completed postdoctoral studies in social epidemiology at the Harvard School of Public Health.

Don Bradley, M.D., MHS-CL, is an associate consulting professor in the Department of Community and Family Medicine at Duke University and the director for the Practical Playbook (www.practicalplaybook.org). He retired in 2014 from the Blue Cross and Blue Shield of North Carolina (BCBSNC), where he served in a number of roles, including executive director for BCBSNC's federally qualified health maintenance organization and as senior vice president, health care and chief medical officer. His accomplishments there include production of the company's first primary care provider profiles/reports, implementation of BCBSNC's first fully transparent online medical policy, development and successful marketing of the State of Preventive Health Summits, development and implementation of the country's first Bariatric Surgery Centers of Excellence in collaboration with the American Society of Bariatric Surgery, development of an office-based endoscopy network (so members could obtain endoscopy services for an office copay rather than a deductible and co-insurance), creation of BCBSNC's Healthy Lifestyle Choices program (nutrition counseling benefits, coaching, and incentives for physical activity and healthy lifestyle choices), and the lead role in implementation of BCBSNC's patient-centered medical home (PCMH) program. Dr. Bradley continues his work as chair of the North Carolina Health Quality Alliance and as a member of the Academy of Nutrition and Dietetics Board of Trustees.

William (Bill) H. Dietz, M.D., Ph.D., is a consultant to the Roundtable on Obesity Solutions and chair of the Sumner M. Redstone Global Center on Prevention and Wellness at the Milken Institute School of Public Health at The George Washington University. He was director of the Division of Nutrition, Physical Activity, and Obesity in the Center for Chronic Disease

Prevention and Health Promotion at the Centers for Disease Control and Prevention (CDC) from 1997 to 2012. Prior to his appointment to CDC, he was a professor of pediatrics at the Tufts University School of Medicine and director of clinical nutrition at the Floating Hospital of New England Medical Center Hospitals. Dr. Dietz has been a counselor and is past president of the American Society for Clinical Nutrition, and is past president of the North American Association for the Study of Obesity. From 2001 to 2003, he served as a member of the Advisory Board to the Institute of Nutrition, Metabolism, and Diabetes of the Canadian Institutes for Health Research. Dr. Dietz received his B.A. from Wesleyan University in 1966 and his M.D. from the University of Pennsylvania in 1970. After completing his residency at Upstate Medical Center, he received a Ph.D. in nutritional biochemistry from the Massachusetts Institute of Technology. Dr. Dietz is a member of the National Academy of Medicine.

Ihuoma Eneli, M.D., M.S., FAAP, is an associate director for the American Academy of Pediatrics Institute for Healthy Childhood Weight. She is a board-certified general pediatrician and professor of clinical pediatrics at The Ohio State University College of Medicine and Nationwide Children's Hospital, Columbus, Ohio. In her role as director of the Center for Healthy Weight and Nutrition (CHWN), Dr. Eneli oversees a comprehensive pediatric obesity center with activities that include advocacy, prevention, medical weight management, and adolescent bariatric surgery. She also directs the Primary Care Obesity Network (PCON), which provides obesity-related training, resources, and community integration for 19 primary care practices in central Ohio. Dr. Eneli is actively engaged in research; has published several papers and book chapters; and has received funding from several sources, including the National Institutes of Health (NIH). She has a particular interest in intervention research for pediatric obesity. Dr. Eneli serves in different capacities on regional and national childhood obesity workgroups, including the Children's Hospitals Association (CHA) Focus on a Fitter Future Group; lead of the Health Resources and Services Administration (HRSA) Region 5 National Initiative for Children's Healthcare Quality Healthy Weight Collaborative team; steering committee member on the American Academy of Pediatrics (AAP) Institute for Healthy Child Weight; site lead for the PEDsNET Healthy Weight Collaborative; and co-director for the Obesity Expert Exchange program, supported by AAP and CHA. She is a member of the National Academies of Sciences, Engineering, and Medicine's Roundtable on Obesity Solutions. Dr. Eneli received her medical degree from the University of Nigeria and completed her pediatric residency at Michigan State University, where she served as chief resident. She also received a master of science degree in epidemiology and completed an NIH-K30 institutional clinical research fellowship at Michigan State University.

Matt Gallivan is the health policy advisor for Senator Bill Cassidy, M.D. (R-LA). He oversees the senator's health policy work for the Senate Finance and Senate Health, Education, Labor, and Pensions (HELP) Committees. He previously worked for Congressman Erik Paulsen (MN-3) for 5.5 years, during which he managed the congressman's Ways and Means health portfolio as his senior legislative assistant. Mr. Gallivan holds his B.A. in political science and Arabic from the University of Notre Dame. He is currently pursuing his M.B.A. at Johns Hopkins Carey School of Business, with a concentration in health care management.

Linda Gigliotti, M.S., R.D.N., CDE, serves as a consultant with the Diocese of Orange (California) as director of wellness programs. She was previously program director of the Weight Management Program and Executive Health Program at the University of California, Irvine, working with a multidisciplinary staff in a medical office setting focusing exclusively on weight management and risk factor reduction. Ms. Gigliotti holds a master's degree in nutrition education from the University of Delaware. She is a certified diabetes educator and holds certificates of training from the Academy of Nutrition and Dietetics in both childhood/adolescent and adult weight management. Her professional experience includes nutritional support and metabolic management as well academic appointments. She has extensive experience in outpatient and community education, specifically in weight management and lifestyle modification, working with clients to make choices to manage their health. Ms. Gigliotti is a registered dietitian nutritionist and a member of the Academy of Nutrition and Dietetics. She currently serves as a commissioner to the Commission on Dietetic Registration (CDR). She has been engaged in the development of the new credential Certified Specialist in Obesity and Weight Management since its inception. Past activities include the Academy Evidence-Based Practice committee, Weight Management Dietetic Practice Group (chair), and CDR Obesity and Weight Management Practice Analysis Task Force.

Steven B. Heymsfield, M.D., is a professor and director of the Body Composition-Metabolism Laboratory at the Pennington Biomedical Research Center of the Louisiana State University System in Baton Rouge. He stepped down as executive director of Pennington Biomedical in 2013 to assume his current position. Dr. Heymsfield received a degree in medicine from Mount Sinai School of Medicine, and he completed his internship, residency, and fellowship in pharmacology at Emory University. He then joined the Emory University School of Medicine faculty as an associate professor of medicine and assistant director of the National Institutes of Health (NIH)-funded Clinical Research Unit. Expanding on his interests

in obesity and metabolism, Dr. Heymsfield next moved to Columbia University, College of Physicians and Surgeons, where he held positions as professor of medicine and deputy director, New York Obesity Research Center at St. Luke's-Roosevelt Hospital. He and his Columbia colleagues conducted wide-ranging clinical studies on obesity with a focus on energy metabolism, body composition, and pharmacologic weight control management. Prior to his Pennington Biomedical position, Dr. Heymsfield was global director of scientific affairs for the obesity group at Merck. He has published more than 600 peer-reviewed papers covering such topics as obesity, malnutrition, cachexia, body composition, and caloric expenditure. His contributions to the study of human nutrition earned him the TOPS Award from The Obesity Society (TOS), the Rhoads Award from the American Society of Parenteral and Enteral Nutrition (ASPEN), the Robert H. Herman Memorial Award from the American Society of Nutrition (ASN), and the George Bray Founders Award from TOS, and he was honored for his role in the Food and Drug Administration (FDA) ban on ephedra, receiving the 2004 New York City Mayor's Award for Science and Technology. Dr. Heymsfield was elected fellow of TOS in 2014, and he is an honorary member of the American Dietetic and Chilean Clinical Nutrition Associations. He is past president of ASPEN and ASN and is vice president-elect of TOS.

Nikki Highfield is the mother of a teenage child who has struggled with obesity the majority of his life. Her son is a patient of Healthworks at Cincinnati Children's Hospital. Ms. Highfield was a parent advocate for the Healthy Weight Network, a project funded by the Patient-Centered Outcomes Research Institute (PCORI). In addition to the Healthy Weight Network, she is currently a member of the research advisory board for the Phenotype Estimation for Patient-centered Pediatric HER Research (the PEPPER Study) as a parent stakeholder. In addition to her work with these studies, she is a business owner in the education sector.

Robert Kushner, M.D., M.S., is a professor of medicine at Northwestern University Feinberg School of Medicine and director of the Center for Lifestyle Medicine in Chicago, Illinois. After finishing a residency in internal medicine at Northwestern University, he went on to complete a postgraduate fellowship in clinical nutrition and earned a master's degree in clinical nutrition and nutritional biology from the University of Chicago. Dr. Kushner is past president of The Obesity Society (TOS), the American Society for Parenteral and Enteral Nutrition, and the American Board of Physician Nutrition Specialists; immediate past chair of the American Board of Obesity Medicine; past board member of the Obesity Action Coalition; and co-editor of *Current Obesity Reports*. He was recently awarded the 2016 Clinician-of-the-Year Award by TOS. Dr. Kushner has authored more than

215 original articles, reviews, books, and book chapters covering medical nutrition, medical nutrition education, and obesity, and is an internationally recognized expert on the care of patients who are overweight or have obesity. He is author/editor of multiple books, including *Dr. Kushner's Personality Type Diet* (St. Martin's Griffin Press, 2003; iUniverse, 2008), *Fitness Unleashed* (Three Rivers Press, 2006), and *Counseling Overweight Adults: The Lifestyle Patterns Approach and Tool Kit* (Academy of Nutrition and Dietetics, 2009), and is editor of the American Medical Association's *Assessment and Management of Adult Obesity: A Primer for Physicians* (2003). Current books include *Practical Manual of Clinical Obesity* (Wiley-Blackwell, 2013), *Treatment of the Obese Patient, 2nd Edition* (Springer, 2014), *Nutrition and Bariatric Surgery* (CRC Press, 2015), and *Lifestyle Medicine: A Manual for Clinical Practice* (Springer, 2016).

Theodore (Ted) Kyle, R.Ph., M.B.A., is an advocacy advisor to The Obesity Society. In 2009, he founded ConscienHealth to help experts and organizations work for evidence-based approaches to health and obesity. Through ConscienHealth, Mr. Kyle works to advance changes in policy and public opinion that will allow new approaches to be developed and put into use. At ConscienHealth, he devotes half of his work to nonprofit advocacy, serving The Obesity Society's Advocacy Committee, the Steering Committee for the STOP Obesity Alliance, and the Board of Directors for the Obesity Action Coalition. Mr. Kyle also works to help clients develop scientific, regulatory, policy, and business strategies that obesity experts can support. Prior to joining ConscienHealth, in 2008, Mr. Kyle completed a 26-year career with GlaxoSmithKline (GSK). As director of policy and innovation for GSK Weight Control, he led the effort to identify, acquire, and gain approval to market the first ever nonprescription weight loss product in the United States. Mr. Kyle's work aligning the commercial strategy for allī® with the needs of consumers and advocates for public health played a critical role in securing Food and Drug Administration approval and a positive image for the brand in the marketplace. As a result of Mr. Kyle's work, major professional organizations and leading experts in obesity policy testified and wrote in favor of approval. Allī was one of the top consumer brand introductions of 2007, and *Time* magazine named allī one of the top 10 medical breakthroughs of 2007. In addition to his work in obesity, Mr. Kyle has worked on diverse health issues, such as tobacco dependence, HIV, infectious diseases, gastrointestinal health, cancer, and organ transplantation. He holds two degrees from the University of North Carolina at Chapel Hill: a bachelor of science in pharmacy and a master of business administration.

Lisel Loy, J.D., L.L.M., has 25 years of experience in law, public policy, and government. She currently serves as vice president for programs at the

Bipartisan Policy Center (BPC), where she leads the planning and execution of an integrated portfolio of BPC's program work. She also oversees the Prevention Initiative, part of the integrated BPC Health Program, which seeks to reduce obesity and chronic disease and their associated health care costs. In 2001, Ms. Loy helped establish BPC's first project, the National Commission on Energy Policy (NCEP), and she served as the Commission's deputy director from 2002 to 2006. Prior to that, she was assistant to the president and staff secretary to President Clinton, where she was responsible for overseeing the flow of all information to and from the Oval Office. She was special counsel to the deputy secretary at the Department of the Interior from 1997 to 1999, where she worked on a variety of issues, including water, salmon, dams, and Indian treaty rights. From 1995 to 1997, she was a staff attorney in the clinical program at the Georgetown University Law Center, where she represented individuals, nonprofit groups, and the Mattaponi Indian tribe in a range of environmental and civil rights claims. She began her career working for a conservation group on nutrition education, land use, and community gardens in New York City. She is admitted to the bar in Washington, DC, and New York. She received her B.A. from Yale University, her J.D. from Stanford Law School, and her L.L.M. from Georgetown University.

Nikki Massie is a professional writer, marketer, and online community leader living in Baltimore, Maryland. She received her bachelor of arts degree in English from the University of Maryland, Baltimore County and her master of arts degree in contemporary communications from Notre Dame of Maryland University. In January 2008, Ms. Massie underwent Roux-en-Y gastric bypass surgery under the care of Dr. Kuldeep Singh at St. Agnes Hospital in Baltimore. As a result of the surgery, she has maintained a weight loss of 125 pounds. Since her surgery, Ms. Massie has become a community leader and patient advocate within the bariatric community, running a popular recipe website called Bariatric Foodie. She also serves as a board member of the Obesity Action Coalition.

Marc Michalsky, M.D., is a professor of clinical surgery and pediatrics at The Ohio State University College of Medicine, where he serves as surgical director for the Center for Healthy Weight and Nutrition at Nationwide Children's Hospital in Columbus, Ohio. Under Dr. Michalsky's leadership, the center's Adolescent Bariatric Surgery Program has become recognized both nationally and internationally for its clinical excellence related to surgical outcomes, as well as its long-standing participation in the Teen-Longitudinal Assessment of Bariatric Surgery (Teen-LABS) study, an ongoing multicenter National Institutes of Health (NIH)-funded observational study designed to investigate the long-term safety and efficacy of

adolescents with severe obesity undergoing surgical weight loss. In August 2015, the bariatric surgery program at Nationwide Children's earned distinction as the first freestanding pediatric center in the United States to be awarded clinical accreditation as part of the American College of Surgeons' Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program. Dr. Michalsky has published numerous peer-reviewed articles on clinical outcomes related to bariatric surgical intervention in the adolescent population and has served in leadership positions on committees for various national organizations, including the American Society of Metabolic and Bariatric Surgery, American Pediatric Surgical Association, American Academy of Pediatrics, and American College of Surgeons.

Joseph Nadglowski is the president and CEO of the Obesity Action Coalition (OAC), a nonprofit organization formed in 2005 that is dedicated to elevating and empowering those affected by obesity through education, advocacy, and support. A frequent speaker and author on the importance of obesity awareness, Mr. Nadglowski has more than 20 years of experience working in patient advocacy, public policy, and education and is a graduate of the University of Florida. He is a patient advocate who has publicly shared his own personal experiences with obesity, as well as those of OAC's members, on many boards, task forces, and workgroups and in public testimony. He was the recipient of the 2012 Society for the Study of the Alimentary Tract (SSAT) Public Service Award and of the 2016 Obesity Society Presidential Medal. As part of his advocacy work, he has dedicated a significant part of his work to the recognition of weight bias, its impact on those with obesity, and the nation's efforts to combat it.

Anand Parekh, M.D., M.P.H., is the Bipartisan Policy Center's (BPC's) chief medical advisor, providing clinical and public health expertise across the organization, particularly in the areas of aging, prevention, and global health. Prior to joining BPC, he completed a decade of service at the Department of Health and Human Services (HHS). As deputy assistant secretary for health from 2008 to 2015, he developed and implemented national initiatives focused on prevention, wellness, and care management. Briefly in 2007, he was delegated the authorities of the assistant secretary for health, overseeing 10 health program offices and the U.S. Public Health Service Commissioned Corps. Earlier in his HHS career, he played key roles in public health emergency preparedness efforts as special assistant to the science advisor to the secretary. Dr. Parekh is a board-certified internal medicine physician; a fellow of the American College of Physicians; and an adjunct assistant professor of medicine at Johns Hopkins University, where he previously completed his residency training in the Osler Medical Program of the Department of Medicine. He provided volunteer clinical services for many

years at the Holy Cross Hospital Health Center, a clinic for the uninsured in Silver Spring, Maryland. Dr. Parekh is an adjunct professor of health management and policy at the University of Michigan School of Public Health. He currently serves on the dean's advisory board of the University of Michigan School of Public Health, the Presidential Scholars Foundation board of directors, and the board of directors of WaterAid America. He has spoken widely and written extensively on a variety of health topics, such as chronic care management, population health, value in health care, and the need for health and human services integration. A native of Michigan, Dr. Parekh received a B.A. in political science, an M.D., and an M.P.H. in health management and policy from the University of Michigan. He was selected as a U.S. Presidential Scholar in 1994.

Thomas Parry, Ph.D., is the president, CEO, and co-founder of the Integrated Benefits Institute (IBI), a San Francisco-based independent, not-for-profit, national organization incorporated in 1995. IBI provides research, lost-time benchmarking, measurement/modeling tools, and educational programs to improve health, lost time, and productivity management. IBI is supported by more than 1,100 organizations employing 20 million people. Employer organizations represent 90 percent of IBI's membership. In addition to directing IBI's activities, Dr. Parry continues his involvement in IBI's research, measurement/modeling, and benchmarking programs. He has directed many studies at IBI since the organization's inception, including research analyzing the impact of medical care on disability outcomes, as well as two studies on chief financial officers (CFOs): the first examining CFOs' view of health and health care in their companies, and the second assessing how CFOs would link workforce health to business outcomes. He also is the chief architect of IBI's disability/absence benchmarking and health and productivity measurement programs. Dr. Parry speaks on integrated benefits and health and productivity issues at conferences and symposia both in the United States and abroad. He also served for 5 years as research advisor to the Roadway Express Inc. Medical Board. Before co-founding IBI, Dr. Parry served 11 years as research director at the California Workers' Compensation Institute (CWCI). His research at CWCI encompassed a wide variety of topics in workers' compensation. While at CWCI, he was engaged in some of the earliest research and analysis on 24-hour coverage and integrated benefit issues. Dr. Parry received his bachelor's, master's, and Ph.D. degrees from the University of California, Berkeley.

Bill Purcell is an attorney in Nashville, Tennessee, and an adjunct professor of public policy at Vanderbilt University. While he was serving as mayor of Nashville (1999 to 2007), his accomplishments as a civic leader earned him Public Official of the Year honors in 2006 from *Governing* magazine.

Elected to five terms in the Tennessee House, he held the positions of majority leader and chair of the Select Committee on Children and Youth. After retiring from the General Assembly, Mr. Purcell founded and became director of the Child and Family Policy Center at the Vanderbilt Institute of Public Policy Studies. From 2008 to 2010, he served as director of the Institute of Politics at the Harvard Kennedy School of Government. He was then appointed special advisor and co-chair of the Work Team for Allston in the Office of the President at Harvard University. He previously served in various capacities on the National Academies of Sciences, Engineering, and Medicine's obesity-related committees, including the Committee on an Evidence Framework for Obesity Prevention Decision Making (member), the Committee on Accelerating Progress in Obesity Prevention (vice chair), and the Standing Committee on Childhood Obesity Prevention (member). He graduated from Hamilton College and Vanderbilt University School of Law.

Goutham Rao, M.D., FAHA, is the Jack H. Medalle professor and chairman of family medicine and community health at University Hospitals of Cleveland and Case Western Reserve University School of Medicine. He is board-certified in both family medicine and obesity medicine. Dr. Rao is immediate past chair of the American Heart Association's Obesity Committee, and most recently was clinical professor of medicine at the University of Chicago Pritzker School of Medicine. He was also clinical director of the Weight Management and Wellness Center at Children's Hospital of Pittsburgh (2004–2011) and associate professor of pediatrics at the University of Pittsburgh School of Medicine. He is editor-in-chief of the journal *Childhood Obesity and Nutrition*. Dr. Rao's research focuses on the primary care management of obesity and associated cardiovascular risks, especially among children and adolescents. He is the principal investigator of a research grant funded by the Agency for Healthcare Research and Quality (AHRQ) titled "Improving Diagnosis of Hypertension in Children." Dr. Rao is the author of more than 100 publications, including 3 books. He is a graduate of McGill University School of Medicine and completed his residency training at the University of Toronto. He completed his fellowship training at the University of Pittsburgh.

Marsha Schofield, M.S., R.D., L.D., FAND, is senior director, governance and nutrition services coverage at the Academy of Nutrition and Dietetics. In this role, she provides leadership and oversight for the association's efforts to position members for success in changing health care delivery and payment models. In addition, she directs the Academy's efforts to expand coverage for nutrition services in the public and private markets. Prior to coming to the Academy, she served as the director for the Access to Care

program in Summit County, Ohio (a network of donated health care for low-income, uninsured individuals). In previous positions, she has served as clinical nutrition manager, assistant director of food and nutrition services, and clinical dietitian at several community and academic medical centers. She has been regional vice president at a food and nutrition management consulting firm and has owned her own consulting practice. She has worked in acute care inpatient services, outpatient services, long-term care, home care, wellness, consultation and business practice, and community health programs with populations ranging from pediatrics to geriatrics. She has served as adjunct faculty and preceptor with several different dietetics education programs, as well as serving as clinical instructor for a dietetic internship. She received her B.S. degree in dietetics through the Coordinated Undergraduate Program in Dietetics at the University of Delaware and her M.S. degree in nutrition from the University of North Carolina at Greensboro. Prior to joining the staff at the Academy, she served on the Board of Directors and as speaker of the House of Delegates. In addition, she has held numerous leadership positions within the Academy on the local, state, and national levels.

Lynn Sha, M.P.P., joined Senator Tom Carper's (D-DE) health care team in 2009 and now serves as the senator's aide, with primary responsibility for Medicare, Medicaid, private health insurance, and social services programs. Prior to joining Senator Carper's staff, Ms. Sha was a fellow in the Federal Fiscal Policy program at Office of Management and Budget (OMB) Watch, a nongovernmental organization focused on improving government transparency, efficiency, and performance. Before joining OMB Watch, she was an associate at the Woodrow Wilson International Center for Scholars, working on issues related to U.S. economic competitiveness, global trade, and science and technology. Ms. Sha received her M.P.P. from Georgetown University and her B.A. in history from the College of William and Mary.

Deirdra Stockmann, Ph.D., M.U.P., is the lead for secondary prevention in the Division of Quality and Health Outcomes, Center for Medicaid and CHIP Services, Centers for Medicare & Medicaid Services (CMS). In this role, she works with states and other public health partners to improve access to and quality of preventive services for people enrolled in Medicaid and the Children's Health Insurance Program (CHIP), with the goal of improving health outcomes. Before joining CMS in 2012, Dr. Stockmann worked on multistakeholder collaborations to address social determinants of health and other aspects of community well-being, including access to healthy food in urban environments. She holds a Ph.D. and a master's degree in urban planning from the University of Michigan and a bachelor's degree from the University of Pennsylvania.

Adam Tsai, M.D., M.S.C.E., FACP, is chair of the Education Committee at The Obesity Society and an internal medicine physician in Denver, Colorado. He practices internal medicine and obesity medicine at Kaiser Permanente of Colorado. Dr. Tsai is also associate professor of medicine at the University of Colorado, where he worked for 5 years before moving to Kaiser Permanente. He has published more than 50 peer-reviewed papers in clinical obesity research, including publications in the *New England Journal of Medicine*, *Journal of the American Medical Association*, and *Annals of Internal Medicine*. His primary research interests include obesity treatment in primary care settings and the economics of obesity treatment. He is board-certified in internal medicine and obesity medicine.

Bryce Williams, M.S., is the Blue Shield of California's vice president of well-being, responsible for strategic leadership and innovation focused on improving the health and well-being of Blue Shield's 6,000 employees and 4 million members. Under his leadership, Blue Shield's innovative lifestyle medicine program, Wellvolution, has garnered national recognition for delivering market-leading engagement rates and demonstrated improvement in member health status. Prior to joining Blue Shield of California, Mr. Williams led health and wellness initiatives for the Blue Cross Blue Shield of Massachusetts during the state's implementation of universal coverage and health care reform initiatives. During his career, he has held a number of executive leadership positions at academic research, startup, and not-for-profit organizations. Mr. Williams holds bachelor's degrees in finance and Spanish from Southern Methodist University and an M.S. in exercise physiology from the University of Wisconsin–La Crosse.

Bruce M. Wolfe, M.D., FACS, FASMBS, is a graduate of Stanford University and the St. Louis University School of Medicine. His surgical training was completed at St. Louis University, with an additional fellowship at Harvard Medical School. He is board-certified in surgery as well as obesity medicine. Relocating to Oregon Health & Science University from the University of California, Davis, Dr. Wolfe has continued to devote his career to surgical nutrition and the treatment of obesity. His research interests lie at the intersection of surgical outcomes of obesity and health policy as it relates to obesity treatment coverage. He chaired a National Institutes of Health (NIH)-funded research consortium studying the clinical, epidemiological, and behavioral outcomes of bariatric surgery, known as the Longitudinal Assessment of Bariatric Surgery (LABS). He has served as co-chair of the Advocacy Committee of The Obesity Society. Dr. Wolfe is also involved in Oregon's coordination of obesity treatment coverage policies under Medicaid, providing expert testimony that champions comprehensive guidelines

and quality improvement. His local and national policy efforts toward expanding obesity treatment, as well as numerous ongoing research projects and mentorship of doctoral students, underscore Dr. Wolfe's dedication to upstream efforts to prevent and ameliorate obesity and related sequelae.

Susan Woolford, M.D., M.P.H., is an assistant professor and co-director of the Mobile Technology to Enhance Child Health (MTECH) Program in the Child Health Evaluation and Research (CHEAR) Unit at the University of Michigan. For the past 10 years, she has served as medical director of the Pediatric Weight Management program at the C.S. Mott Children's Hospital. Her research focuses on the use of communication technology to aid physician-patient communication in the treatment of childhood obesity. In recognition of her innovative work in the area of childhood obesity, Dr. Woolford served as co-medical director of the Children's Hospital Association's Expert Exchange on childhood obesity and is a member of the Advisory Board of the American Academy of Pediatrics Institute for Healthy Childhood Weight.

Susan Yanovski, M.D., is co-director of the Office of Obesity Research and senior scientific advisor for clinical obesity research at the National Institute of Diabetes and Digestive and Kidney Diseases of the National Institutes of Health in Bethesda, Maryland. Dr. Yanovski received her medical degree from the University of Pennsylvania in Philadelphia. She completed her residency and fellowship in family medicine at the Thomas Jefferson University School of Medicine in Philadelphia and a postdoctoral fellowship in eating disorders research at the National Institute of Mental Health. Dr. Yanovski has served on the editorial boards of the *American Journal of Clinical Nutrition*, *Archives of Family Medicine*, and *Eating Behaviors*. She has published more than 150 peer-reviewed papers, and was a member of the expert panel that developed the 2013 American Heart Association (AHA)/American College of Cardiology (ACC)/The Obesity Society (TOS) *Guideline for the Management of Overweight and Obesity in Adults*. Dr. Yanovski's research interests include behavioral, medical, and surgical approaches for obesity treatment in adults and children and the study of binge eating disorder.

