Definitions of overweight and obesity are now based on the body mass index (BMI). The BMI is calculated by dividing the weight in kilograms by the square of the height in meters (kg/m²). Adults with a BMI of >25 are considered overweight; those with a BMI of >30 are considered obese.

**DIETS**

For any diet to be effective, caloric expenditure must exceed caloric intake. One pound of fat is equivalent to 3500 Kcalories; adults can lose 1-2 lbs per week by consuming 500-1000 fewer Kcalories per day.

**TYPES OF DIETS** — Table 1 lists 5 popular diets. Manipulation of the proportions of protein, fat and carbohydrate in the diet is an old approach to making one type of diet more attractive than another. Most diet plans also include a component of lifestyle and behavior modification.

### Table 1. Common Diets

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight Watchers</td>
<td>Moderate energy deficit Portion control</td>
</tr>
<tr>
<td><a href="http://www.weightwatchers.com">www.weightwatchers.com</a></td>
<td></td>
</tr>
<tr>
<td>LEARN (Lifestyle, Exercise, Attitude, Relationships, Nutrition)</td>
<td>Moderate energy deficit Intensive lifestyle modification</td>
</tr>
<tr>
<td><a href="http://www.thelifestylecompany.com">www.thelifestylecompany.com</a></td>
<td></td>
</tr>
<tr>
<td>Ornish</td>
<td>Vegetarian-based Fat restricted (&lt;10% of total calories)</td>
</tr>
<tr>
<td><a href="http://www.ornish.com">www.ornish.com</a></td>
<td></td>
</tr>
<tr>
<td>Zone</td>
<td>Low carbohydrate Carbs/Protein/Fat 40/30/30</td>
</tr>
<tr>
<td><a href="http://www.zonediet.com">www.zonediet.com</a></td>
<td></td>
</tr>
<tr>
<td>Atkins</td>
<td>Very low carbohydrate Minimal fat restriction</td>
</tr>
<tr>
<td><a href="http://www.atkins.com">www.atkins.com</a></td>
<td></td>
</tr>
</tbody>
</table>

**COMPARATIVE TRIALS** — Two trials of low-carbohydrate vs. conventional diets showed significantly greater weight loss with the low-carbohydrate diet in the first 6 months, but no significant difference at 12 months. In both trials, adherence was poor and attrition was high.¹²

In a 1-year trial, 160 overweight or obese patients (BMI range 27-42) with at least one risk factor for cardiovascular disease were randomized to the Zone, Atkins, Ornish or Weight Watchers diet. All diets suffered from diminished adherence over time, with dropout rates of 35-50%. In completers, the diets were successful at inducing weight loss of 2.1-3.3 kg; there was no significant difference between them in the amount of weight lost.³

Another randomized 1-year trial compared the Atkins, Zone, Ornish and LEARN diets in overweight or obese pre-menopausal women (mean age 41; mean BMI 32) and managed to keep retention rates high, ranging from 76-88%. The range of weight loss at one year was 2-5% of baseline weight. The only significant difference was between the Atkins diet (4.7 kg) and the Zone diet (1.6 kg). There was no significant difference in weight loss between the Zone, Ornish and LEARN programs (The A to Z Weight Loss Study).⁴

**MAINTENANCE** — Short-term results tend to be encouraging with almost all diets, but maintenance of weight loss is often disheartening. Patients on a diet generally lose 5% of body weight over the first 6 months, but by 12-24 months weight has usually returned to baseline. The long-term ineffectiveness of weight-reduction diets may be due to compensatory changes in energy expenditure that oppose the maintenance of a lower body weight, as well as a complex set of genetic and environmental interactions.⁵ A persistent energy deficit is critical for active weight loss; increased physical activity and self-monitoring of weight are critical in the successful maintenance of weight loss.⁶

**SIDE EFFECTS** — Carbohydrate restriction leads to ketosis; there is no evidence that ketosis suppresses...
Diet, Drugs and Surgery for Weight Loss

appetite, but it does often lead to diuresis, producing a particularly rapid weight loss in the first 7-14 days. At least for the first 6-12 months, a high-fat, low-carbohydrate diet, appears to have no adverse effects on risk factors for atherosclerosis, such as serum lipids, blood pressure, serum glucose or serum insulin. In multiple studies, a low-carbohydrate diet improved cardiometabolic risk factors, such as HDL-cholesterol and triglyceride concentrations, more than a low-fat diet did. The mechanism is unclear.

LIFESTYLE CHANGES

One of the greatest risks of obesity, type 2 diabetes, can be reduced by lifestyle modification programs that focus on weight loss, increased physical activity and changes in energy intake.8,9

One study in more than 3000 patients (mean age 50; mean BMI 34) with fasting and post-load serum glucose elevations found that lifestyle changes over an average of 2.8 years appeared more effective than metformin (Glucophage, and others) in preventing diabetes (Diabetes Prevention Program Research Group).9 Every kilogram of weight loss produced a 16% reduction in diabetes risk. The participants who did not meet the weight loss goal but did achieve the physical activity goal still had a 44% lower-than-predicted incidence of diabetes.10

A randomized trial in more than 5000 overweight or obese patients with type 2 diabetes found that intensive lifestyle intervention focusing on caloric restriction and increased physical activity was more successful than traditional diabetes support and education in achieving and maintaining significant weight loss. At 1 year, lifestyle patients lost 8.6% of initial body weight compared to a 0.7% loss in the traditional group (The LOOK AHEAD Trial).11

DRUGS

A number of drugs such as antipsychotics, antidepressants and antidiabetic agents cause weight gain, and stopping them or substituting another drug, if possible, can help with weight control. Only a few drugs have been approved by the FDA for treatment of obesity, and all have major drawbacks.

FDA-APPROVED DRUGS — All of the drugs approved for weight reduction by the FDA may be effective in the short term when used in conjunction with diet and exercise, but when the drug is stopped, the weight is often regained.

Sympathomimetic amines – The oldest weight-loss drugs are sympathomimetic amines such as methamphetamine (Desoxyn), phentermine (Adipex-P, and others) and diethylpropion. All of these drugs are controlled substances. Phentermine was widely used with fenfluramine until the combination (“phen-fen”) was found to be associated with heart valve abnormalities.12 Fenfluramine alone and dexfenfluramine,13 a related drug, were also associated with heart valve abnormalities and primary pulmonary hypertension, and were removed from the market.

Sibutramine (Meridia) – Sibutramine15 is a norepinephrine, serotonin and, to a lesser extent, dopamine reuptake inhibitor. It has been used for weight loss for up to 2 years in conjunction with a low-calorie diet. Two different meta-analyses of sibutramine use in adults found a mean weight loss of 4 kg after one year.14,16 A randomized controlled trial found that the addition of sibutramine to a lifestyle modification program increased weight loss by 5.4 kg.17

Dose-related increases in blood pressure and heart rate can occur, in addition to dry mouth, headache, insomnia and constipation. Sibutramine is not recommended for patients with poorly controlled hypertension, tachycardia or underlying cardiovascular disease. It should not be used concurrently with other serotonergic drugs such as selective serotonin reuptake inhibitors (SSRIs).

Orlistat (Xenical; Alli) – Now available OTC,18 orlistat is a lipase inhibitor that decreases absorption of fat from the gastrointestinal tract. It is modestly effective in increasing weight loss as an adjunct to diet. Patients taking it for 2 years have lost about 2.5-3 kg more than those taking a placebo.14,16 Adverse effects including flatulence with discharge, oily spotting and fecal urgency occur predominantly after high-fat dietary indiscretions and are associated with a high incidence of drug discontinuation. Fat-soluble vitamin supplements should be taken 2 hours before or 1 hour after taking orlistat.19

DRUGS FOR DEPRESSION (OFF LABEL) — Some reports have suggested that patients who take fluoxetine...
Diet, Drugs and Surgery for Weight Loss

(Prozac, and others), setraline (Zoloft, and others), paroxetine (Paxil, and others) or another SSRI for depression tend to lose weight. (Serotonin is believed to play a role in regulation of satiety.) Clinical trials have confirmed that these drugs can enhance weight loss in the first 6-12 months of a calorie-restricted diet. Long-term use of these drugs, however, seems to cause weight gain, with some patients becoming heavier than they were at baseline. Other adverse effects include nervousness, insomnia and sexual dysfunction.

Bupropion (Wellbutrin SR) – A non-SSRI antidepressant also used for treatment of tobacco dependence, bupropion SR 300-400 mg/day has been modestly effective in promoting weight loss. In a 24-week, double-blind trial, 215 patients (mean BMI 36) took 300 or 400 mg of the drug in addition to a low-calorie diet. Among the 147 actively treated patients who completed all 24 weeks of the trial, weight loss was 7.2% and 10.1%, compared to 5% with placebo. Bupropion is generally well tolerated. It has been reported to increase the risk of seizures, but the slow-release formulation is less likely to have this effect. Insomnia and anxiety can occur.

DRUGS FOR EPILEPSY (OFF LABEL) — Zonisamide (Zonegran, and others) – An antiepileptic drug that caused weight loss as an adverse effect, zonisamide was tried for weight reduction as an adjunct to calorie restriction. In a 16-week, double-blind, randomized trial, 30 patients with a mean BMI of 36 who took gradually increasing doses of the drug (maximum 600 mg per day, as in epilepsy) lost an average of 5.9 kg, compared to 0.9 kg lost by 30 patients on placebo. Zonisamide has caused dizziness, cognitive problems such as confusion, difficulty concentrating and speech abnormalities, increases in serum creatinine concentrations, and fatal Stevens-Johnson Syndrome.

Topiramate (Topamax) – Topiramate is another antiepileptic drug that caused weight loss in patients with epilepsy. A randomized, double-blind trial in 385 patients (mean BMI 37) also on a reduced-calorie diet found that 64-384 mg per day of topiramate for 6 months led, in the 248 patients who completed the trial, to a 4.8-6.3% weight loss, compared to a loss of 2.6% with placebo. In a 60-week study, 854 obese participants who took topiramate in doses of 96, 192 and 256 mg daily achieved weight loss of 7.0%, 9.1% and 9.7% respectively, compared to a 1.7% weight loss with placebo. In a 16-week placebo-controlled study of 111 obese patients with type 2 diabetes, controlled-release topiramate titrated to 175 mg per day, alone or in combination with metformin, produced significant weight loss (6.0 vs. 2.5 kg), but with high rates of neurological and psychiatric adverse events including paresthesias, somnolence, and difficulties in memory, concentration and attention.

DRUGS FOR DIABETES (OFF-LABEL) — Metformin (Glucophage, and others) – A biguanide marketed for oral treatment of type 2 diabetes, metformin has caused modest weight loss in some patients. In patients with early blood glucose abnormalities, metformin plus diet was associated with an average 2.1-kg weight loss compared to a loss of 0.1 kg with placebo. In a 16-week randomized study of 854 patients with type 2 diabetes also taking metformin or a sulfonylurea; 30-week trials found weight loss of 1.6 to 2.8 kg. The most common adverse effects are nausea, which tends to decrease over time, and hypoglycemia, which occurs predominantly in conjunction with a sulfonylurea. Because it slows gastric emptying, exenatide can decrease the rate and extent of absorption of other drugs.

Exenatide (Byetta), a synthetic peptide that stimulates glucose-dependent insulin secretion, is FDA-approved as an adjunct to oral agents in the treatment of type 2 diabetes. Given twice daily by subcutaneous injection, it causes a dose-dependent reduction in weight in patients with type 2 diabetes also taking metformin or a sulfonylurea; 30-week trials found weight loss of 1.6 to 2.8 kg. The most common adverse effects are nausea, which tends to decrease over time, and hypoglycemia, which occurs predominantly in conjunction with a sulfonylurea. Because it slows gastric emptying, exenatide can decrease the rate and extent of absorption of other drugs.

Pramlintide (Symlin), an amylin analog given by subcutaneous injection before meals at the same time as insulin, has been associated with weight loss. Patients with diabetes on insulin otherwise tend to gain weight as glycemic control improves.) In a 1-year randomized study of 656 patients with type 2 diabetes, patients taking pramlintide 120 mcg twice daily in addition to insulin lost 1.4 kg compared to a gain of 0.7 kg with placebo. In a 16-week randomized study of 204 non-insulin-using obese patients (mean BMI 38), among whom only 20% had type 2 diabetes, taking pramlintide 240 mcg tid was associated with a 3.7% placebo-corrected weight loss. Adverse effects include nausea, irritation at the injection site and mild hypoglycemia. Since pramlintide slows gastric emptying, it may decrease the rate and extent of absorption of orally administered drugs.
Surgical treatment for obesity is generally limited to patients with a BMI >40 or a BMI >35 with an obesity related co-morbidity. The two most common procedures are Roux-en-Y gastric bypass and adjustable gastric banding. When performed laparoscopically they are associated with lower complication and morbidity rates than open procedures. Vertical banded gastroplasty has generally been replaced by adjustable gastric banding.

In a 10-year prospective, non-randomized trial, maximal weight loss for any type of surgery was seen at 1-2 years: 32% with gastric bypass and 20% with gastric banding. After 10 years, weight loss was stabilized at 25% and 14% respectively. Mortality (adjusted for sex, age and risk factors) was 29% lower in the patients who had surgery.40 Obesity-related co-morbidities such as obstructive sleep apnea and diabetes often resolve after bariatric surgery even before patients achieve significant weight loss.41

**SURGERY**

**EXPERIMENTAL DRUGS — Rimonabant —**

Stimulation of cannabinoid type 1 (CB1) receptors has been associated in animal models with increased food intake and peripheral fat accumulation; antagonism of this receptor has been shown to blunt these responses.36 In a randomized, controlled trial in more than 3000 obese or high-risk overweight patients, 20 mg of rimonabant (Acomplia in Europe – Sanofi-Aventis), a selective CB1 antagonist, was shown to induce clinically significant weight loss (4.7 kg more than placebo at one year) and improve dyslipidemia (RIO-North America).37 However, a meta-analysis of 4 randomized controlled trials of rimonabant found a significant increase in adverse psychiatric events, including depressive mood disorders and anxiety.38 Rimonabant is approved in some European countries, but not in the US or Canada.39

In a 10-year prospective, non-randomized trial, maximal weight loss for any type of surgery was seen at 1-2 years: 32% with gastric bypass and 20% with gastric banding. After 10 years, weight loss was stabilized at 25% and 14% respectively. Mortality (adjusted for sex, age and risk factors) was 29% lower in the patients who had surgery.40 Obesity-related co-morbidities such as obstructive sleep apnea and diabetes often resolve after bariatric surgery even before patients achieve significant weight loss.41

**ROUX-EN-Y GASTRIC BYPASS —** A mixed restrictive and malabsorptive procedure, Roux-en-Y gastric bypass creates a proximal 20-30 mL pouch of stomach and anastomoses it to a limb of jejunum,

---

**Table 2. Some Drugs for Treatment of Obesity**

<table>
<thead>
<tr>
<th>Drug</th>
<th>Formulations</th>
<th>Dosage</th>
<th>Cost ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SYMPATHOMIMETIC AMINES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benzphetamine – generic</td>
<td>50 mg tabs</td>
<td>25-50 mg once/d</td>
<td>$12.44</td>
</tr>
<tr>
<td><em>Didrex</em> (Pfizer)</td>
<td>50 mg tabs</td>
<td>to 50 mg tid</td>
<td>$15.36</td>
</tr>
<tr>
<td>Diethylpropion – generic</td>
<td>25 mg tabs</td>
<td>25 mg tid</td>
<td>$8.66</td>
</tr>
<tr>
<td>extended-release – generic</td>
<td>75 mg ER tabs</td>
<td>75 mg once</td>
<td>$9.00</td>
</tr>
<tr>
<td>Methamphetamine – Desoxyn</td>
<td>5 mg tabs</td>
<td>2.5-5 mg bid-tid</td>
<td>$64.44³¹⁰⁰</td>
</tr>
<tr>
<td>(Ovation)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phendimetrazine – generic</td>
<td>35 mg tabs</td>
<td>35 mg bid-tid</td>
<td>$4.18</td>
</tr>
<tr>
<td><em>Bontril</em> PDM (Valeant)</td>
<td>105 mg ER caps</td>
<td>105 mg once</td>
<td>$12.88</td>
</tr>
<tr>
<td>extended-release – generic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Bontril Slow-release</em> (Valeant)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phentermine</td>
<td>15, 30, 37.5 mg tabs, caps</td>
<td>5-37.5 mg once²⁸</td>
<td>$8.44</td>
</tr>
<tr>
<td><em>Adipex-P</em> (Gate)</td>
<td>37.5 mg tabs, caps</td>
<td>37.5 mg once²⁸</td>
<td>$19.16</td>
</tr>
<tr>
<td><strong>OTHERS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orlistat – <em>Xenical</em> (Roche)</td>
<td>120 mg caps</td>
<td>120 mg tid¹⁴</td>
<td>$86.25</td>
</tr>
<tr>
<td><em>Alli</em>³³</td>
<td>60 mg caps</td>
<td>60 mg tid¹⁴</td>
<td>$18.33</td>
</tr>
<tr>
<td>Sibutramine⁵ – <em>Meridia</em> (Abbott)</td>
<td>5, 10, 15 mg caps</td>
<td>10-15 mg once¹⁵</td>
<td>$39.20</td>
</tr>
</tbody>
</table>

1. Weight loss drugs including OTC medications are not recommended for use during pregnancy.
2. Cost of 10 days' treatment with lowest recommended dosage according to prices at drugstore.com.
3. Approved only for short-term use (a few weeks).
4. Do not take within 2 weeks of starting or stopping a monoamine oxidase (MAO) inhibitor.
5. Usually taken mid-morning to mid-afternoon.
6. Cost of 50 mg once/day.
7. One hour before meals.
8. Usually taken mid-morning.
9. Taken 30 minutes before meals.
10. Cost of 5 mg bid.
11. Taken 30-60 minutes before breakfast.
13. Available OTC.
14. Taken with fatty meals or up to 1 hour later; omit dose if meal is skipped; approved for up to 2 years' use. Diet should contain less than 30% fat.
15. Taken with or without food; 5 mg recommended for patients who cannot tolerate 10 mg; approved for 2 years' use.
bypassing most of the stomach, all of the duodenum and the first 15-20 cm of the jejunum. Undigested nutrients meet digestive enzymes in the common channel where the two separated limbs join.

**Efficacy** – The mean loss of excess weight (the difference between actual weight and ideal weight) with this procedure has been 65-75%.[41] Resolution or improvement rates for diabetes have been about 90%, for hypertension 90%, and for hyperlipidemia about 95%. A large retrospective cohort study suggested a 40% reduction in all-cause mortality, including deaths from diabetes, cardiovascular disease and cancer, in patients who had undergone gastric bypass surgery compared to a severely obese control population, but the incidence of death related to accidents or suicide was higher in the surgical group.[42]

**Adverse effects** – Perioperative mortality is about 0.5%. Iron, calcium, vitamin D and vitamin B12 deficiency can occur because of malabsorption. Dumping syndrome (nausea, bloating, colic, diarrhea) can occur because of rapid emptying from the gastric pouch into the jejunal pouch. Pulmonary embolism has been reported. Some patients who had a gastric bypass developed clinically significant hyperinsulinemic hypoglycemia; the pathophysiology is unclear.[43]

**ADJUSTABLE GASTRIC BANDING** — Use of a laparoscopically adjustable gastric band placed around the proximal portion of the stomach and injected with variable amounts of saline has now largely replaced fixed gastric banding. If patients continue to feel hungry or are not losing weight at an expected rate, they can receive an outpatient injection of saline to help increase restriction and promote satiety.

**Efficacy** – Data on gastric banding are confounded by studies that have combined non-adjustable with adjustable gastric bands. Excess weight loss is about 50-65% with resolution or improvement rates of about 80% for diabetes, about 70% for hypertension and about 60% for hyperlipidemia.[41] In a 2-year trial of 60 patients with BMI 30-40 and a recent diagnosis of type 2 diabetes, those who underwent laparoscopic adjustable gastric banding had a remission rate for diabetes of 73% compared to 13% in a medical treatment arm.[44] Patients with BMI 30-35 would not meet current NIH guidelines for weight reduction surgery.[45]

**Adverse Effects** – Adjustable gastric banding is a restrictive procedure with no associated malabsorption; it has a perioperative mortality of 0.1%, the lowest rate among all commonly employed bariatric procedures. Slippage, band erosion, excess vomiting and port site and tubing problems are the most common adverse effects; these may require an operative revision for correction.

**CONCLUSION**

Losing even a small amount of weight and increasing physical activity can prevent some of the complications of obesity, particularly type 2 diabetes. Diet and exercise are the preferred methods for losing weight but are associated with high long-term failure rates. Drugs may help some patients, but all currently available drugs for weight reduction have drawbacks. Gastric surgery can produce marked weight loss in the severely obese, but long-term data on safety are limited.

---

Diet, Drugs and Surgery for Weight Loss

37. FX Pi-Sunyer et al. Effect of rimonabant, a cannabinoid-1-receptor blocker, on weight and cardiometabolic risk factors in overweight or obese patients: RIO-North America: a randomized controlled trial. JAMA 2006; 295:761.
44. JB Dixon et al. Adjustable gastric banding and conventional therapy for type 2 diabetes: a randomized controlled trial. JAMA 2008; 299:316.

Coming Soon in Treatment Guidelines:
Anticoagulants and Antiplatelet Drugs – May 2008
Tobacco Dependence – June 2008
Introducing

Treatment Guidelines: Online Continuing Medical Education
Up to 24 credits included with your subscription
www.medicalletter.org/tgcme

For over 25 years, The Medical Letter has offered health care professionals continuing medical education (CME) with The Medical Letter on Drugs and Therapeutics. We are now offering CME for Treatment Guidelines from The Medical Letter in an online format only, called the Online Series. Each Online Series is comprised of 6 monthly exams and eligible for up to 12 credits. For those who just need a few credits, we also offer the Quick Online Credit Exam (earn up to 2 credits/12 questions). For more information, please visit us at www.medicalletter.org/tgcme.

Choose CME from Treatment Guidelines from The Medical Letter and earn up to 24 Category 1 AMA PRA Credits per year in the format that's right for you:

Online Series - Answer 12 questions per issue online. Earn up to 2 credits/exam. Take up to 6 short exams per six-month series and earn up to a total of 12 credits. The Online Series is included with a paid subscription to Treatment Guidelines.

Quick Online Credit Exam - Access content for any available issue, answer 12 questions online, and earn up to 2 credits for $12.00 (available to both subscribers and non-subscribers).

ACCREDITATION INFORMATION:

ACCM: The Medical Letter is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians. The Medical Letter designates this educational activity for a maximum of 2 AMA PRA Category 1 Credit(s)™. Physicians should only claim credit commensurate with the extent of their participation in this activity. This CME activity was planned and produced in accordance with the ACCME Essentials.

AAFP: The Medical Letter (2008) has been reviewed and is acceptable for up to 15 Prescribed credits by the American Academy of Family Physicians. AAFP accreditation begins 01/01/08. Term of approval is for one year from this date. This exam is approved for 1.25 Prescribed credits. Credits may be claimed for one year from the date of this exam.

ACPE: The Medical Letter is accredited by the Accreditation Council for Pharmacy Education as a provider of continuing pharmacy education. This issue is acceptable for 2.0 hours of Continuing Education Credit (0.2 CEU).

AANP and AAPA: The American Academy of Nurse Practitioners (AANP) and the American Academy of Physician Assistants (AAPA) accept AMA Category 1 Credit for the Physician’s Recognition Award from organizations accredited by the ACCME.

AOA: This activity, being ACCME (AMA) approved, is acceptable for Category 2-B credit by the American Osteopathic Association.

MISSION:
The mission of The Medical Letter's Continuing Medical Education Program is to support the professional development of health care professionals including physicians, nurse practitioners, pharmacists and physician assistants by providing independent, unbiased drug information and prescribing recommendations that are free of industry influence. The program content includes current information and unbiased reviews of FDA-approved and off-label uses of drugs, their mechanisms of action, clinical trials, dosage and administration, adverse effects and drug interactions. The Medical Letter delivers educational content in the form of self-study material.

The expected outcome of the CME Program is that knowledge and consideration of the information contained in The Medical Letter and Treatment Guidelines can affect health care practice and ultimately result in improved patient care and outcomes.

The Medical Letter will strive to continually improve the CME program through periodic assessment of the program and activities. The Medical Letter aims to be a leader in supporting the professional development of health care professionals by providing continuing medical education that is unbiased and free of industry influence.

LEARNING OBJECTIVES:
Activity participants will read and assimilate unbiased reviews of FDA-approved and off-label uses of drugs and other treatment modalities.

Activity participants will be able to select and prescribe, or confirm the appropriateness of the prescribed usage of the drugs and other therapeutic modalities discussed in Treatment Guidelines with specific attention to pathophysiology, dosage and administration, drug metabolism and interactions, and patient management.

Activity participants will make independent and informed therapeutic choices in their practice.

DO NOT FAX OR MAIL THIS EXAM
To take this exam, go to:
www.medicalletter.org/tgcme

Issue 68 Questions

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
</table>
| 1. The body mass index (BMI) is defined by which one of the following ratios? | a. lbs/inch  
  b. lbs/m²  
  c. kg/m  
  d. kg/m² |
| 2. Patients on a diet alone often lose weight in the first 6 months, but weight usually returns to baseline by: | a. 12 months  
  b. 12-24 months  
  c. 18 months  
  d. 18-36 months |

Page: 23  Page: 23

Continues on next page >>
3. Drugs that cause weight gain include all except which one of the following:
   a. antipsychotics
   b. insulin
   c. topiramate
   d. SSRIs
   Page: 24,25

4. Mean weight loss with sibutramine plus diet after one year was:
   a. 4 kg
   b. 6 kg
   c. 8 kg
   d. 10 kg
   Page: 24

5. Use of sympathomimetic amines for weight loss is FDA-approved for up to:
   a. 8 weeks
   b. 12 weeks
   c. 26 weeks
   d. 52 weeks
   Page: 24

6. Bupropion has been modestly effective in promoting weight loss, but it may increase the risk of:
   a. seizures
   b. diabetes
   c. depression
   d. soiling
   Page: 25

7. Metformin has also been modestly effective as an adjunct to diet in promoting weight loss. Its main toxicity is:
   a. CNS depression
   b. unpleasant GI effects
   c. headache
   d. seizures
   Page: 25

8. The main adverse effects of zonisamide are related to:
   a. glucose control
   b. depression
   c. cognition
   d. GI effects
   Page: 25

9. Surgery for obesity is generally limited to patients with a BMI over:
   a. 25
   b. 30
   c. 35
   d. 40
   Page: 26

10. After bariatric surgery, obesity-related co-morbidities such as diabetes:
    a. generally do not resolve
    b. resolve as the patient loses weight
    c. often resolve before patients achieve significant weight loss
    d. often become worse
    Page: 26

11. The mean loss of excess weight with the Roux-en Y gastric bypass has been:
    a. 35-45%
    b. 45-55%
    c. 55-65%
    d. 65-75%
    Page: 27

12. Adjustable gastric banding is adjusted:
    a. by the patient
    b. laparoscopically
    c. surgically
    d. none of the above
    Page: 27