

Assessment and management of patients with obesity

By Mary Annette Hess, PhD, FNP-BC, CNS and W. Timothy Garvey, MD, FACE



Faculty

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Intended audience

This continuing education (CE) activity has been designed to meet the educational needs of women's health nurse practitioners (NPs), adult NPs, family NPs, and certified nurse midwives involved in women's health.

Continuing education (CE) approval period

Now through August 31, 2016

Estimated time to complete this activity

1 hour

Needs assessment

Obesity affects more than one-third (or 78.6 million) of adults in the United States. Obesity prevalence varies across the country, with the greatest prevalence reported in the South, followed by the Midwest, Northeast, and West. As of 2013, no state had an obesity prevalence lower than 20%. Models forecast that obesity will affect 42%-51% of the U.S. population by 2030. Obesity is associated with an increased risk for several co-morbidities, including coronary heart disease, hypertension, stroke, type 2 diabetes, hyperlipidemia, metabolic syndrome, cancer, osteoarthritis, sleep apnea, and gallstones. In women, obesity contributes to reproductive health problems (e.g., infertility) and it can have adverse effects on pregnancy and fetal health. The high prevalence of obesity and related co-morbidities poses a major economic burden on this country.

Research has demonstrated that weight loss in persons with obesity leads to a reduction in co-morbidities, a restoration of fertility, and reduced complications during pregnancy, childbirth, and postpartum. Weight loss of only 5%-10% can lead to increased health benefits. Primary care clinics are an ideal setting for early identification and management of obesity; however, data suggest a lack of full understanding and competence

regarding obesity management. Given the elevated health and economic burdens of obesity, as well as the benefits that accrue when weight loss occurs, healthcare providers likely to first encounter patients with obesity, including NPs, must be aware of current recommended management guidelines and therapeutics and implement weight loss and weight maintenance plans in their patients with obesity.

Educational objectives

At the conclusion of this educational activity, participants should be able to:

- Apply communication strategies to initiate and implement weight management programs in patients with obesity.
- Follow weight management guidelines from the NHLBI, the AACE, AHA/ACC/TOS, and the ASBP to individualize weight loss treatment plans for patients with obesity.
- Evaluate the safety and efficacy of current and emerging pharmacotherapies for obesity.

Accreditation statement

This activity has been evaluated and approved by the Continuing Education Approval Program of the National Association of Nurse Practitioners in Women's Health (NPWH), and has been approved for 1 contact hour of CE credit, including 1 contact hour of pharmacology content.

Faculty disclosures

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Mary Annette Hess, PhD, FNP-BC, CNS, reports that she has no conflicts of interest.

W. Timothy Garvey, MD, FACE, reports these relationships: Consultant/advisory board: AstraZeneca; Boehringer Ingelheim; Daiichi-Sankyo; Janssen Pharmaceuticals, Inc.; Liposcience; Novo Nordisk; Takeda Pharmaceuticals International, Inc.; Vivus, Inc.

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generally accepted standards in their own communities and integrating the information in this activity with that of established recommendations of other authorities, national guidelines, FDA-approved package inserts, and individual patient characteristics.

Successful completion of this activity

Successful completion of this activity, J-15-08, requires participants to (a) read the learning objectives, disclosures, and disclaimers; (b) study the material in the learning activity; (c) during the approval period (now through August 31, 2016), 1. click on the link to the course and log on to the NPWH Online Continuing Education Center (<https://npwh.org/courses/home/details/517>); 2. complete the online posttest and evaluation; and 3. earn a score of 70% or better on the posttest.

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Before reading the article, [click here^A](#) to take the pretest.

Obesity is a *disease*, not a condition resulting from ill-advised behavioral choices.¹ After all, obesity meets the essential criteria of a disease: It has characteristic signs or symptoms; it manifests as an impairment in the normal functioning of some aspect of the body; and it results in harm or morbidity. As such, healthcare providers (HCPs) need to identify obesity in their patients, assess each patient's risk for obesity-related complications, begin the weight-loss discussion in a thoughtful and constructive manner, and institute an individualized management plan.

KEY WORDS: obesity, risk assessment, obesity-related complications, dietary changes, weight-loss medications

Definitions and prevalence

Obesity can be defined as a body mass index (BMI) ≥ 30 kg/m² or it can be suggested by a waist circumference (WC) > 35 inches (in women).² But obesity is more than just a calculation or a measurement; it is a primary disease entity that can lead to cardiometabolic, biomechanical, and other complications (*Figure 1*).^{3,4}

Here is a number that matters:

Almost 80 million U.S. adults—almost 35% of the adult population in this country—meet criteria for obesity,⁵ with certain geographic areas and certain ethnic groups overrepresented. Prevalence of obesity is higher in southern states and some Midwestern states than in other parts of the country,⁶ as illustrated by this **CDC map^B**. Non-Hispanic blacks have the highest age-adjusted

rate of obesity (47.8%), followed by Hispanics (42.5%), non-Hispanic whites (32.6%), and non-Hispanic Asians (10.8%).⁵ Although overall obesity prevalence is similar in women and men at any given age, women have a higher prevalence of class II obesity (BMI, 35.0-39.9) and class III obesity (BMI ≥ 40).⁷

Risk assessment

Given the high prevalence of obesity, HCPs will likely encounter many patients in their practices who are candidates for weight management. In each case in which obesity is identified, the first step needed is to assess the patient's risk for obesity-related complications. This assessment includes calculating BMI, measuring WC, and screening for the presence of cardiovascular disease (CVD) risk factors and co-morbidities.⁸ Compared with body weight alone, BMI is a better, albeit indirect, measure of adiposity, which is associated with a host of cardiometabolic abnormalities. WC, an indicator of abdominal adipos-

ity, should be measured in patients with a BMI ≤ 35 (the WC cut-off of >35 inches in women adds little predictive value in those with a BMI >35), including those who are overweight (BMI, 25-29.9). Women whose WC exceeds 35 inches are at increased risk for developing hypertension (HTN), type 2 diabetes mellitus (T2DM), and CVD.

Therefore, HCPs need to check patients' blood pressure (BP) to assess for HTN and order a fasting blood glucose (FBG) test, and even a 2-hour oral glucose tolerance test and HbA_{1c} in high-risk individuals, to assess for T2DM and pre-diabetes.⁹ The metabolic syndrome, which increases risk for T2DM, CVD, and stroke, is identified in women by the presence of at least three of these five risk factors: WC >35 inches, triglycerides ≥ 150 mg/dL, high-density lipoprotein cholesterol (HDL-C) <50 mg/dL, BP $\geq 130/85$ mm Hg, and FBG ≥ 100 mg/dL.¹⁰

Some obesity-associated diseases and risk factors place patients in a very-high-risk category for subsequent mortality.⁸ Patients with obesity and co-morbid coronary heart disease (CHD), other atherosclerotic diseases, T2DM, metabolic syndrome, pre-diabetes, or sleep apnea require aggressive modification of risk factors in addition to clinical management of the co-morbid disease. Furthermore, obesity has an aggravating effect on CVD risk factors such as cigarette smoking, HTN, high concentration of low-density lipoprotein cholesterol, low concentration of HDL-C, impaired FBG, family history of premature CHD, and age ≥ 55 years (in women). HCPs need to identify these risk factors to determine the intensity of the clinical interven-

tion that a patient requires. Obesity takes a toll not just in terms of its effect on CVD risk, but also on cancer risk. The Cancer Research UK study showed that women with obesity had a 25% risk of developing a weight-related cancer—including cancer of the bowel, gallbladder, uterus, kidney, pancreas, or esophagus, as well as post-menopausal breast cancer—in their lifetime.¹¹ Cancer risk in these women was 40% higher than that in their slimmer counterparts.

Initiating the conversation

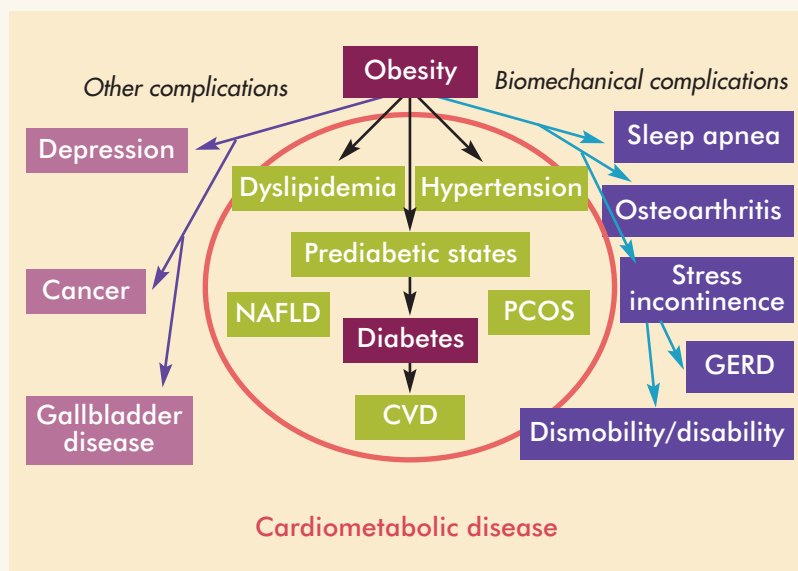
Either a patient or an HCP can initiate the conversation regarding the need to lose weight. The situation is generally easier to handle when a patient expresses a desire to lose weight. She has already acknowledged existence of the disease—that is, the obesity—and is seeking treatment for it on her own. However, in many cases, the HCP must broach the topic, usually after a patient has come in for a routine visit and the findings

from her history, physical examination, and laboratory tests indicate that steps must be taken to lower her risk for experiencing obesity-related complications—or to treat the complications that already exist.

To avoid discomfiting a patient in this situation, a panel of nurse practitioners convened by the American Nurse Practitioner Foundation (ANPF) recommends that the HCP show her objective data reflecting her disease and her risk for future complications—with an emphasis that obesity is a *health problem*—and then assess her motivation and readiness for change.⁷ In this context, the HCP and the patient need to synchronize their expectations and goals for weight loss therapy. HCPs now have reliable tools to help patients lose 5%-10% of their body weight. This weight loss may not produce the desired cosmetic outcome but will no doubt result in clinical benefits. The emphasis is on improving the *health* of the patient.

To inspire a patient with obesity

Figure 1. Health-related complications of obesity^{3,4}



CVD, cardiovascular disease; GERD, gastroesophageal reflux disease; NAFLD, non-alcoholic fatty liver disease; PCOS, polycystic ovary syndrome.

to want to lose weight and to commit to follow a weight-loss treatment plan, the HCP can help her identify at least one compelling reason to lose weight.⁷ Common patient-centered reasons include (1) decreasing the risk of having a complicated pregnancy; (2) being able to play with children or grandchildren; (3) walking without becoming short of breath; (4) preventing other chronic diseases such as T2DM; and (5) improving existing weight-related complications such as sleep apnea or T2DM. Of note, some patients may not be aware of the health risks posed by obesity and will be motivated to lose weight once educated about the risks.

Approach to management

Once a patient with obesity is motivated and ready to lose weight, the HCP needs to work with her to devise a management plan. Both of them should agree on the goals of weight-loss therapy and on the purpose of long-term therapy. A realistic initial goal for many patients is a loss of 5% of body weight in 3 months. Three major management options—lifestyle modification, pharmacotherapy, and bariatric surgery—can bring about weight loss and reduce obesity-related morbidity and mortality.¹ This article focuses on the first two options.

Lifestyle modification

A comprehensive weight-loss program starts with lifestyle modification comprised of dietary changes, increased activity, and behavioral control.¹²

Dietary changes

With regard to energy intake, the ANPF recommends a reduction of

500-1,000 kcal/day, which can be accomplished by limiting portion size, reducing fat and sugar intake, and using commercial weight-loss meal replacements.⁷ The patient can follow one of many diets shown to be safe and effective; examples are a low-carbohydrate diet,¹³ a low-fat diet,¹⁴ a Mediterranean diet,¹⁵ a low-glycemic-load diet,¹⁶ and a portion-controlled diet.¹⁷

Practical dietary tips include avoiding skipping meals and consuming small meals and between-meal snacks every 3-4 hours. With regard to food intake, moderation

A realistic initial goal for many patients is a loss of 5% of body weight in 3 months.

is the watchword. With regard to fluid intake, however, drinking eight 8-oz glasses of water a day is crucial unless contraindicated (e.g., in patients with renal failure).

Choice of a particular diet is less important than making a commitment and adhering to the diet,¹⁸ although following a regimen tailored for a co-morbidity makes sense. Because compliance is the key to success, the diet plan should accommodate the patient's personal and cultural preferences. Regardless of the diet chosen, patients should monitor their caloric intake via a food diary and weigh themselves at least once a week.¹⁹

Increased activity

Choice of a particular activity (e.g., walking, swimming) depends on a

patient's preference and access to, say, a pool, as well as her current weight and health status. An assessment of mobility, cardiovascular (CV) status, and perhaps pulmonary function is needed before a patient embarks on a new exercise program.²⁰ The goal is to increase energy expenditure.²⁰ Exercising for ≥ 150 minutes/week can lead to modest weight loss and help prevent weight regain; doubling this amount will promote more robust weight loss.²¹ As with food intake, patients should record their daily physical activity.

Exercise not only facilitates weight loss but also improves CV health by reducing BP, lipid levels, and visceral fat. These reductions are linked to improved glucose tolerance and insulin sensitivity in persons without diabetes and improved glycemic control in patients with T2DM.¹² Enhanced physical fitness may even lessen obesity-related mortality. Of note, patients with obesity must modify their diet and increase physical activity in order to lose weight and reduce their risk for obesity-related complications. Another note: In addition to traditional exercise, patients can aim to increase energy expenditure throughout the day by reducing sedentary behaviors. For example, car owners can park twice as far from store entrances as they used to; city dwellers can walk instead of taking a bus, subway, or taxi; and office workers can use a standing desk instead of sitting at their desk.

Behavioral therapy

As applied to weight loss, behavioral therapy entails techniques for helping patients replace habits that contribute to excess weight and poor health with those that

promote weight loss and good health.¹² Key components of behavioral therapy include frequent encounters with HCPs, education, stimulus control, cognitive restructuring, goal-setting, self-monitoring, and social support.²⁰ Group weight-loss programs in community settings, commercial weight-loss programs, and programs delivered by telephone, the Internet, or text message can all be effective, depending on patient preference.¹²

Pharmacotherapy

If a patient has not lost about 5% of her body weight after 3 months, or if she has lost weight but regained some, most, or all of it over time, she and her HCP should consider use of weight-loss medication as an *adjunct* to lifestyle modification. In some patients with severe complications who require clinically meaningful weight loss quickly, lifestyle modification and pharmacotherapy can be initiated concomitantly.

Rationale

In all human beings, calorie restriction triggers various biological adaptations designed to prevent starvation.²² These adaptations may even be potent enough to reverse the initial weight-loss success achieved with lifestyle modification. In persons with obesity, additional biological adaptations function to preserve, or even *increase*, their highest sustained lifetime body weight. As such, more biologically-based interventions are likely to be needed to counter the compensatory adaptations that maintain a person's highest lifetime body weight.²² Other reasons for pharmacologic intervention in facilitating weight loss include the following:

- Appetite-suppressing medication enhances a patient's ability to adhere to a reduced-calorie diet.
- Addition of a weight-loss medication consistently achieves greater weight loss, and for a longer duration of time, than that achieved by the lifestyle intervention alone.
- Medication can help achieve the degree of weight loss needed to treat obesity-related complications.
- The American Association of Clinical Endocrinologists (AACE), the American Society of Bariatric Physicians (ASBP), the American Heart Association (AHA), the American College of Cardiology (ACC), and The Obesity Society (TOS) all recommend use of medication for patients with obesity and sufficient health risk.^{20,23,24}

Principles for use

The FDA indication for use of weight-loss medications is a BMI ≥ 30 or a BMI of 27-29.9 with at least one obesity-related complication. The medication should be

stopped if weight loss is $< 5\%$ after 12 weeks on a maximal dosage. If one agent is ineffective or poorly tolerated, a different one can be tried. All of these agents are contraindicated for use during pregnancy. Pharmacotherapy is individually tailored to each patient's needs. More data are needed regarding the safety of combination therapy and the use of medications beyond 2 years.

Options

Table 1 lists FDA-approved options for treating obesity.²⁵⁻³¹

Table 2. Weight-loss medications: Clinical trial information, accessible through this [link^C](#), shows the results of clinical trials demonstrating the efficacy of these agents.³²⁻³⁹ Figure 2 illustrates the comparative efficacy of these weight-loss medications.^{32-36,38-45}

Guidelines for practice

The spectrum of obesity treatment guidelines ranges from those that are *BMI-centric*, wherein treatment indication is based on BMI and the treatment goal is to lose a given

Figure 2. Comparative efficacy of weight-loss medications^{32-36,38-45}

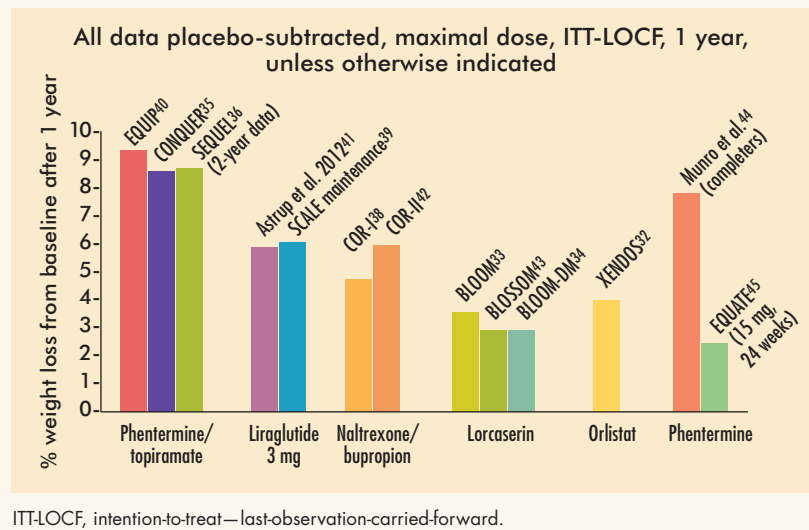


Table 1. Medications approved to treat obesity²⁵⁻³¹

Medication, year of approval	Recommended dosage	Action	Adverse effects	Patient monitoring
Phentermine ²⁶ (Adipex-P [®] , Suprenza™, Ionamin [®]), 1959	30 mg/day PO	Sympathomimetic amine	Restlessness, dizziness, insomnia, euphoria, dysphoria, tremor, HA, psychosis, dry mouth, dysgeusia	Glucose in patients on DM meds; BP
Orlistat ^a (Xenical [®]), ²⁷ 1997	120 mg TID PO with meals	Gastrointestinal lipase inhibitor	Oily spotting, flatus, fecal urgency, fecal incontinence	Glucose in patients on DM meds; take multivitamin containing fat-soluble vitamins
Phentermine/topiramate ER (Qsymia [®]), ²⁸ 2012	7.5 mg/46 mg per day PO Maximum: 15 mg/92 mg per day	Sympathomimetic/anticonvulsant	Paresthesia, dry mouth, constipation, dysgeusia, insomnia	Glucose in patients on DM meds; at baseline and periodically throughout: bicarbonate, potassium, glucose
Lorcaserin (Belviq [®]), ²⁹ 2012	10 mg BID PO	5-HT _{2C} serotonin receptor agonist	HA, dizziness, nausea, constipation, fatigue, dry mouth	Glucose in patients on DM meds; adjust non-glucose-dependent antihyperglycemic meds as needed
Naltrexone SR/bupropion SR ^b (Contrave [®]), ³⁰ 2014	8 mg/90 mg, starting at 1 pill/AM and escalating over 4 weeks to 2 pills BID	Opioid receptor antagonist/dopamine-norepinephrine reuptake inhibitor	N/V, HA, constipation, dizziness, dry mouth, hot flush	Glucose in patients on DM meds
Liraglutide (Saxenda [®]), ³¹ 2014	Start at 0.6 mg/day SC during week 1 and increase weekly to 3 mg/day SC	GLP-1 receptor agonist	N/V/D/C, hypoglycemia, HA, decreased appetite, dyspepsia, fatigue, dizziness, abdominal pain, increased lipase	Glucose and BP in patients on DM and BP meds; discontinue medication and rule out pancreatitis in patients with abdominal pain

BP, blood pressure; DM, diabetes mellitus; ER, extended-release; GLP, glucagon-like peptide; HA, headache; N/V, nausea/vomiting; N/V/D/C, nausea/vomiting/diarrhea/constipation; OTC, over-the-counter; PO, by mouth; SC, subcutaneously; SR, sustained-release.

^aDiet should not be composed of >30% fat. Dosage for OTC preparation is 60 mg TID. Should be taken 3-4 hours apart from L-thyroxine or cyclosporine. Psyllium shown to reduce bowel effects.

^bDiscontinue if 5% weight loss not achieved in 3 months. High-fat meal increases blood levels of the drugs.

amount of weight (e.g., 5%-10%), to those that are *complications-centric*, wherein treatment indication is based on risk for, presence of, and severity of obesity-related complications and the treatment goal is to treat or prevent the complications.⁴⁶

Obesity treatment guidelines^D from the National Heart, Lung, and Blood Institute (NHLBI),

at one end of the spectrum, are based primarily on BMI and WC, although risk factors and co-morbidities are taken into account.⁸ The **AACE^E**, at the other end of the spectrum, recommends (1) evaluating patients with obesity for cardiometabolic and biomechanical complications; (2) selecting (a) therapeutic targets for improvements in complications, (b)

treatment modality, and (c) treatment intensity; and (3) intensifying lifestyle and/or pharmacologic and/or surgical treatment modalities for greater weight loss if therapeutic targets for improvements in complications are not met.²³ *Table 3* lists percentages of weight loss needed to achieve therapeutic benefits with regard to various obesity-related complications.⁴

The **AHA/ACC/TOS obesity guideline^F**, which is closer to that of the NHLBI, recommends (1) identifying patients who need to lose weight, based on BMI and WC; (2) informing patients with CVD risk factors that lifestyle changes that produce even modest sustained weight loss of 3%-5% can result in clinically meaningful health benefits, and that greater weight loss produces greater benefits; (3) devising dietary strategies for weight loss; (4) devising a comprehensive lifestyle program that helps patients adhere to a lower-calorie diet and increase physical activity through use of behavioral strategies; and (5) selecting patients for whom bariatric surgery is advised—that is, those with a BMI ≥ 40 or a BMI ≥ 35 with obesity-related conditions.²⁴ The approach of the **ASBPG** to obesity management, which is closer to that of the AACE, focuses on treating diseases related to increased body fat and its adverse metabolic and biomechanical consequences, which may improve patient health, quality of life, body weight, and body composition.²⁰

Conclusion

Obesity is a disease that requires permanent lifestyle changes. Lifestyle modification, enabled by dietary changes, increased physical activity, and behavioral therapy, is implemented first. If a patient does not reach her goals in terms of reducing her weight and her risk for obesity-related complications, medication is added. Most medications suppress appetite, enhance a patient's ability to follow a reduced-calorie diet, and enable significantly greater weight loss than that achieved by lifestyle changes alone. In addition, med-

Obesity is a disease that requires permanent lifestyle changes.

ication use can help sustain weight loss and prevent weight regain over time.

For patients with obesity and obesity-related co-morbidities, weight loss is used therapeutically to treat the obesity-related complications. The role of the HCP is to diagnose the disease of obesity, assess the patient's risk for obesity-related complications, discuss weight-loss strategies and goals with the patient, support the patient in implementing these strategies and reaching these goals, and provide regular follow-

Table 3. Proportion of weight loss needed to achieve therapeutic benefits⁴

Obesity complication	Weight loss required for therapeutic benefit
Diabetes prevention	3% to 10%
Hypertension	5% to >15%
Dyslipidemia	3% to >15%
Elevated HbA _{1C}	3% to >15%
Nonalcoholic fatty liver disease	10%
Sleep apnea	10%
Osteoarthritis	5% to 10%
Stress incontinence	5% to 10%
Gastroesophageal reflux disease	5% to 10%
Polycystic ovary syndrome	5% to 15% (>10% optimal if the goal is to treat anovulation)

up and encouragement over the ensuing months, years, and decades.

Visit <http://www.NPWomensHealthcare.com/?p=4144> for a complete list of references.

Web resources

- A. <https://healthmonix.com/npwh/courses/home/details/406>
- B. <http://www.cdc.gov/obesity/data/prevalence-maps.html>
- C. <http://www.NPWomensHealthcare.com/?p=4144>
- D. www.nhlbi.nih.gov/guidelines/obesity/prctgd_c.pdf
- E. <https://www.aace.com/files/algorithm-07-11-2013.pdf>
- F. <http://circ.ahajournals.org/content/early/2013/11/11/01.cir.0000437739.71477.ee>
- G. <http://www.asbp.org/obesity/algorithm.html>

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