

Synopsis of the 2020 U.S. VA/DoD Clinical Practice Guideline for the Management of Adult Overweight and Obesity

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ABSTRACT

Introduction:

In May of 2020, the U.S. Veterans Health Administration (VHA) and Department of Defense (DoD) approved a new joint clinical practice guideline for assessing and managing patients who have overweight and obesity. This guideline is intended to give healthcare teams a framework by which to screen, evaluate, treat, and manage the individual needs and preferences of VA and DoD patients who may have either of these conditions. It can be accessed at <https://www.healthquality.va.gov/guidelines/CD/obesity/>.

Materials and Methods:

In January of 2019, the VA/DoD Evidence-Based Practice Work Group convened a joint VA/DoD guideline development effort that included clinical stakeholders and conformed to the Institute of Medicine's tenets for trustworthy clinical practice guidelines.

Results:

The guideline panel developed 12 key questions, systematically searched and evaluated the literature, created a 1-page algorithm, and advanced 18 recommendations using the Grading of Recommendations Assessment, Development, and Evaluation system.

Conclusions:

This synopsis summarizes the key recommendations of the guideline regarding management of overweight and obesity, including referral to comprehensive lifestyle interventions that combine behavioral, dietary, and physical activity change, and additional tools of pharmacologic and procedural interventions. Additionally, recommendations based on evidence found in the literature for short-term weight loss are included. A clinical practice algorithm that is part of the guideline is also included. Additional materials, such as provider and patient summaries and a provider pocket card, are also available for public use, accessible at the U.S. Veterans Health Administration (VHA) Clinical Practice Guidelines (CPG) website listed above.

INTRODUCTION

Overweight and obesity are among the most significant problems facing the U.S. healthcare system today. Based on data

reported for 2017-2018 from the National Health and Nutrition Examination Survey, the prevalence of obesity in 42.4% of adults in the United States has continued to rise, with prevalence of overweight in 31.1% adults in the United States.¹ Among Veterans, 2014 data showed 41% prevalence of obesity and 37% overweight, which was higher than in the general U.S. population at that time.² Moreover, approximately 1 in 13 Americans have obesity class III (body mass index [BMI] ≥ 40 kg/m²).¹ Evidence links overweight and obesity with an increased risk of chronic health conditions and reduced quality of life, as well as earlier mortality, particularly among those with more severe obesity.^{1,3}

Overweight and obesity are associated with increased prevalence and worsening of several obesity-associated conditions, including type 2 diabetes mellitus (T2DM), hypertension (HTN), dyslipidemia, metabolic syndrome, osteoarthritis, and obstructive sleep apnea (OSA). High BMI is also associated with elevated risk for at least 17 different cancers.⁴ Based on data from 2010 through 2015, nearly 50% of adults with obesity had HTN compared with 20% of adults with normal weight, and adults with obesity were four times as likely to have T2DM.⁵ The CDC estimates

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that 9 out of 10 people with diagnosed T2DM have overweight or obesity. Furthermore, as a result of the obesity epidemic, the lifetime risk of diagnosed T2DM from age 20 years is 40.2% for men and 39.6% for women, representing an increase of 20% and 13%, respectively, from 1985 to 1989.⁶ The development or worsening of T2DM, HTN, and dyslipidemia are particularly hazardous due to their independent effects on risk for coronary artery disease and stroke.

Guideline Development Process

To develop these recommendations (see [Table I](#)), the VA/DoD followed a process developed by the VA/DoD Evidence-Based Practice Working Group (EBPWG) that adheres to the standards described for trustworthy guidelines.⁷ The EBPWG selected four guideline panel co-chairs, two from the VA and two from the DoD. The co-chairs in conjunction with VA and DoD leaders selected a multidisciplinary panel of practicing clinician stakeholders with specialists from a variety of disciplines, including endocrinology, preventive medicine, bariatric surgery, primary care, psychology, nutrition, physical therapy, pharmacy, and nursing to develop this guideline (see Supplemental Table). The VA/DoD contracted with The Lewin Group, a third party with expertise in clinical practice guideline development, to facilitate meetings and the development of key questions (KQs) using the population, intervention, comparison, outcome, and setting format. A Veteran/patient and family stakeholder focus group was conducted to assist in determining scope and inform the development of KQs. The guideline panel developed 12 KQs to guide the evidence review (see [Table II](#)). The two critical outcomes of focus of the KQs were changes in or maintenance of weight and safety/adverse events for KQs 6-12 that focus on pharmaceutical interventions, nutraceuticals, and procedural interventions. Change in weight was chosen as the critical outcome given that it is the most frequently published outcome in weight loss studies in the literature, allowing for more reliable comparisons between studies, and based on evidence supporting weight as a surrogate marker for increased risk of chronic health conditions, reduced quality of life, and earlier mortality.³ As an update to the previous VA/DoD Screening and Management of Obesity and Overweight dated 2014, the systematic search of the peer-reviewed literature, conducted by ECRI Institute, covered the time from February 1, 2013, to April 8, 2019. The search methods and results are detailed in the full guideline (www.healthquality.va.gov). The entire guideline panel evaluated the body of evidence and developed the recommendations using the Grading of Recommendations Assessment, Development, and Evaluation method.⁸ A near-final draft of the guideline was sent out for peer review to subject matter experts and clinical leaders working within the VA and DoD healthcare systems, as well as experts from relevant outside organizations designated by the Work Group members, and the guidelines were revised based on this extensive peer-review process.

Recommendations

This guideline provides important information for improving the management of patients with overweight and obesity (see [Fig. 1](#)). As with other clinical practice guidelines, however, challenges remain, including evidence gaps, the need to develop effective strategies for guideline implementation, to assess the cost-effectiveness of interventions, and to evaluate the effect of guideline adherence on clinical outcomes. This guideline is intended for VA and DoD healthcare practitioners, including physicians, nurse practitioners, physician assistants, psychologists, dietitians, physical therapists, social workers, nurses, clinical pharmacy specialists, and community providers involved in the care of service members or Veterans with overweight or obesity (see [Table I](#) and [Fig. 1](#)).

Management of Overweight and Obesity

Obesity is a chronic disease that requires lifelong management. Comprehensive lifestyle interventions (CLIs) have been, and continue to be, the foundation of the management of weight loss. Comprehensive lifestyle interventions are defined as those interventions that combine all three critical components: behavioral, dietary, and physical activity change, together, with the goal of producing a negative energy balance. Evidence supports offering this modality as an in-person meeting either individually or in a group.⁹ Although the evidence suggests that there may be benefit from more intensive counseling programs, with larger effects when 12 or more sessions were offered, there was insufficient evidence to recommend a specific number of sessions, as there are also benefits for offering fewer sessions as well. Comprehensive lifestyle interventions should be offered to maintain weight that has been lost with an initial intervention, to prevent weight regain.⁹⁻¹¹ Although stronger evidence supports offering counseling for CLI in person, there was also evidence to support offering it via telephone as an alternative or an adjunct to an in-person visit.^{12,13}

The use of technology to deliver CLI to patients is an exciting and innovative modality. This includes the use of computer or web-based intervention modules, web-based self-monitoring, mobile phone-based text messages, smartphone applications, social networking platforms, DVD learning, and print-based tailored materials. Despite the excitement surrounding these modalities, the evidence is inconclusive. A subgroup analysis of a large 2018 United States Preventive Services Task Force (USPSTF) systematic review (SR) found no consistent pattern of the effects of 12 various technology-delivered interventions versus control on weight loss outcomes.⁹ Despite the inconsistency of the results, patient preferences should be considered with these modalities since some patients may find these modes of delivery more valuable due to schedule or geographic location constraints, while others may have poor internet connectivity or struggle with

TABLE I. Recommendations

Topic	Sub-topic	No.	Recommendation	Strength ^a	Category ^b	
Management of overweight or obesity	Comprehensive lifestyle interventions (CLIs)	1.	We recommend offering an in-person group or individual comprehensive lifestyle intervention that always includes behavioral, dietary, and physical activity components for patients with overweight or obesity.	Strong for	Reviewed, new-replaced	
		2.	There is insufficient evidence to recommend a specific number of sessions of a comprehensive lifestyle intervention for patients with overweight or obesity.	Neither for nor against	Reviewed, new-replaced	
		3.	We suggest offering a comprehensive lifestyle intervention for weight maintenance to patients who have completed a comprehensive lifestyle intervention for weight loss.	Weak for	Reviewed, new-replaced	
		4.	We suggest offering an individual or group telephone-delivered comprehensive lifestyle intervention for weight loss, either as an alternative to or in conjunction with an in-person intervention.	Weak for	Reviewed, amended	
		5.	There is insufficient evidence for or against offering a comprehensive lifestyle intervention for weight loss that uses technology as its primary mode of delivery.	Neither for nor against	Reviewed, new-replaced	
		Physical activity component of a CLI	6.	We suggest choosing one or more of the following as the physical activity component of a comprehensive lifestyle intervention: aerobic, resistance, and/or lifestyle physical activity.	Weak for	Reviewed, new-replaced
		Dietary component of a CLI	7.	We recommend offering patients a dietary approach that contributes to a negative energy balance to achieve weight loss as the dietary component of a comprehensive lifestyle intervention.	Strong for	Reviewed, amended
	8.		We suggest meal replacement (for example, portion-controlled shake, protein bar, or meal) as an option to achieve negative energy balance as a component of a comprehensive lifestyle intervention.	Weak for	Reviewed, new-replaced	
		Long-term pharmacotherapy	9.	We suggest offering prescribed pharmacotherapy (specifically liraglutide, naltrexone/bupropion, orlistat, or phentermine/topiramate) for long-term weight loss in patients with a body mass index $\geq 30 \text{ kg/m}^2$ and for those with a body mass index $\geq 27 \text{ kg/m}^2$ who also have obesity-associated conditions, in conjunction with a comprehensive lifestyle intervention.	Weak for	Reviewed, new-replaced
	Management of overweight or obesity	Long-term pharmacotherapy	10.	There is insufficient evidence to recommend for or against offering phentermine monotherapy, benzphetamine, diethylpropion, or phendimetrazine, for short-term, long-term, or intermittent weight loss in patients with overweight or obesity.	Neither for nor against	Reviewed, new-added
		Dietary supplements and nutraceuticals	11.	We suggest against using dietary supplements or nutraceuticals for clinically meaningful short-term weight loss or long-term weight management.	Weak against	Reviewed, new-added
		Bariatric procedures and devices	12.	We suggest offering the option of bariatric/metabolic surgery, in conjunction with a comprehensive lifestyle intervention, to patients with a body mass index of $\geq 30 \text{ kg/m}^2$ and type 2 diabetes mellitus.	Weak for	Reviewed, new-added
			13.	We suggest offering the option of bariatric/metabolic surgery, in conjunction with a comprehensive lifestyle intervention, for long-term weight loss/maintenance and/or to improve obesity-associated condition(s) in adult patients with a body mass index $\geq 40 \text{ kg/m}^2$ or those with body mass index $\geq 35 \text{ kg/m}^2$ with obesity-associated condition(s).	Weak for	Reviewed, new-replaced
			14.	There is insufficient evidence to recommend for or against bariatric/metabolic surgery to patients over age 65 years.	Neither for nor against	Reviewed, amended

(continued)

TABLE I. (Continued)

Topic	Sub-topic	No.	Recommendation	Strength ^a	Category ^b
Short-term weight loss (up to 6 months)		15.	There is insufficient evidence to recommend for or against percutaneous gastrostomy devices for weight loss in patients with obesity.	Neither for nor against	Reviewed, new-added
		16.	We suggest offering intragastric balloons in conjunction with a comprehensive lifestyle intervention to patients with obesity (body mass index >30 kg/m ²) who prioritize short-term (up to 6 months) weight loss.	Weak for	Reviewed, new-added
		17.	There is insufficient evidence to recommend for or against intragastric balloons for long-term weight loss to support chronic weight management or maintenance.	Neither for nor against	Reviewed, new-added
		18.	We suggest offering a low-carbohydrate diet over a low-fat diet as the dietary component of a comprehensive lifestyle intervention for patients who prioritize short-term (up to 6 months) weight loss.	Weak for	Reviewed, new-added

^aFor additional recommendations please refer to Grading Recommendations.

^bFor additional information, please refer to Appendix A within full guidelines <https://www.healthquality.va.gov/guidelines/cd/obesity/>

TABLE II. Key Questions

Question number	Question	Number of studies and type of studies
1	What are the benefits and harms of comprehensive lifestyle interventions on weight loss and health outcomes?	5 SRs 9 RCTs
2	Among adults who have achieved initial weight loss, what are the benefits and harms of comprehensive lifestyle interventions on weight maintenance and health outcomes?	1 SR 1 RCT
3	What is the comparative effectiveness of different modes of delivering comprehensive lifestyle interventions on weight loss or weight maintenance and health outcomes?	5 SRs 12 RCTs
4	What is the comparative effectiveness and harms of various dietary approaches on short- and long-term weight loss and health outcomes?	4 SRs 9 RCTs
5, 6	What are the benefits and harms of physical activity on short- and long-term weight loss and health outcomes?	2 SRs 8 RCTs
7	What are the benefits and harms of FDA-approved medications for short-term use (<6 months) or chronic use (>6 months) on weight loss and health outcomes?	3 SRs 3 RCTs in 5 publications
8	What are the benefits and harms of FDA-approved medications on weight maintenance and health outcomes?	1 SR 1 RCT
9	What are the benefits and harms of dietary supplements or nutraceuticals on initial weight loss and long-term weight loss?	5 SRs 7 RCTs
10	What are the benefits and harms of bariatric surgery on short- and long-term weight loss, health outcomes, and comorbid health conditions?	14 SRs
11	What is the comparative effectiveness of different forms of bariatric surgery on short- and long-term weight loss, health outcomes, and comorbid health conditions?	6 SRs 1 RCT
12	What are the benefits and harms of FDA-approved weight loss devices on short- and long-term weight loss status, health outcomes, and comorbid health conditions?	4 SRs 3 RCTs
	Total evidence base	107 studies

Abbreviations: RCT: randomized controlled trial; SR: systematic review.

technology, limiting their access to some modalities. Further considerations for implementing the core components of CLI are discussed in a Standards of Care section of the full CPG.

Diet and physical activity are two important components in weight loss, and the current evidence is reflective of this.

Offering a dietary approach that creates a negative energy balance, in the context of a CLI, has the strongest evidence supporting weight loss. The evidence further reflects that a variety of dietary approaches can support weight loss.^{14–18} There is no single dietary approach that is universally successful. Meal replacement (for example, portion-controlled

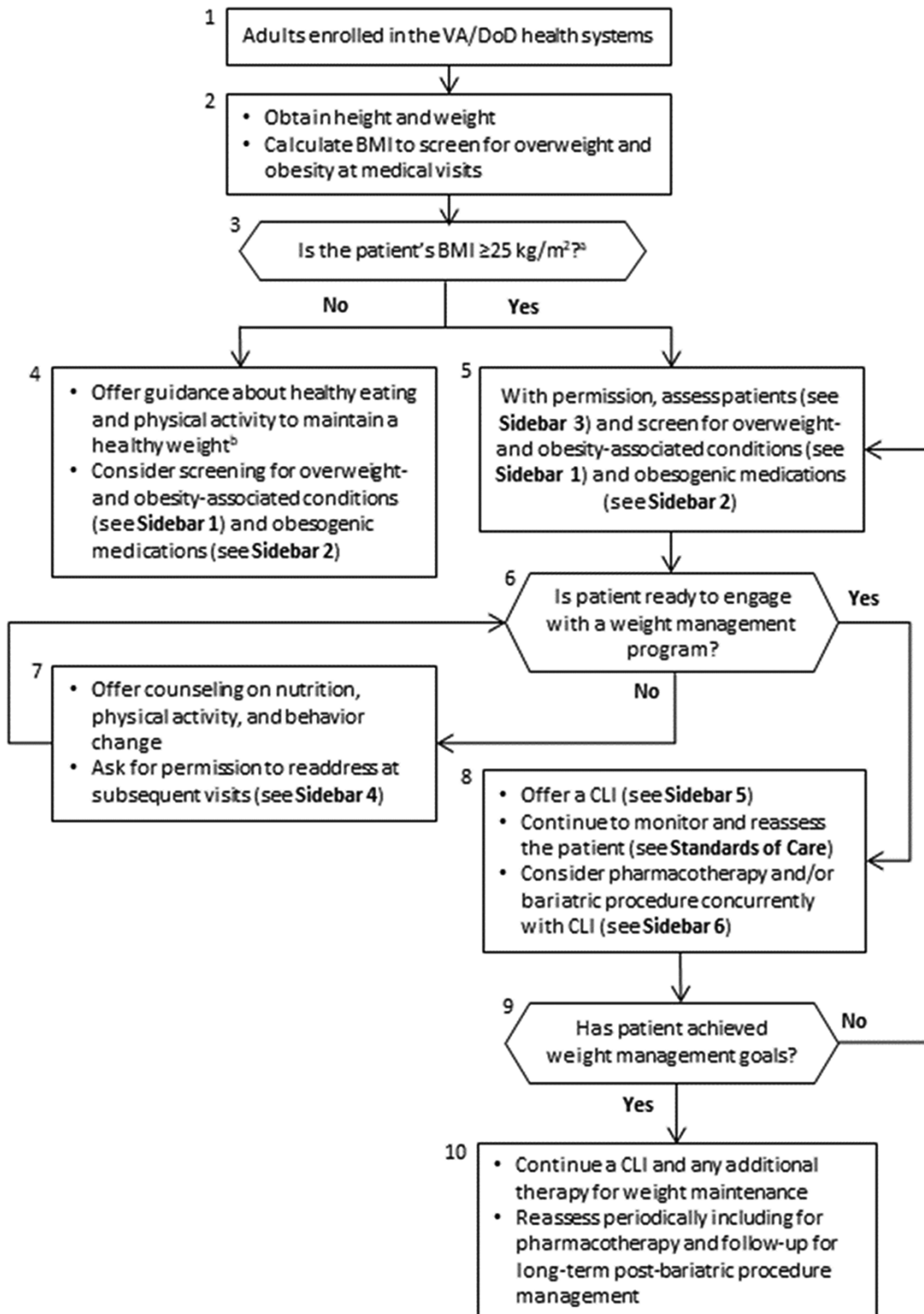


FIGURE 1. Algorithm.

^aFor patients of Asian descent the World Health Organization suggests BMI greater than or equal to 23 kg/m²?; [22] for patients >65 years old: consider individualized assessment [23].

^bSee, for example, 2015-2020 Dietary Guidelines for Americans, 8th edition, available at <https://health.gov/dietaryguidelines/2015/> and Physical Guidelines for American, 2nd Edition, available at <https://health.gov/paguidelines/second-edition/>.

Abbreviations: BMI: body mass index; CLI: comprehensive lifestyle intervention; kg: kilograms; m: meters; Veterans Health Administration (VHA).

Sidebar 1: Common Overweight- and Obesity-Associated Conditions
<ul style="list-style-type: none"> ■ HTN ■ T2DM and prediabetes ■ Dyslipidemia ■ Metabolic syndrome^a ■ OSA ■ OA/degenerative joint disease ■ NAFLD ■ GERD ■ Cancer[69]

^a See National Cholesterol Education Program definition of metabolic syndrome, available at: <https://www.nhlbi.nih.gov/files/docs/guidelines/atglance.pdf>

Abbreviations: GERD: gastroesophageal reflux disease; HTN: hypertension; NAFLD: non-alcoholic fatty liver disease; OA: osteoarthritis; OSA: obstructive sleep apnea; T2DM: type 2 diabetes mellitus

Sidebar 2: Select Medications and their Potential Effects on Weight ^a		
Medication Classes	Medications with Potential for Weight GAIN	Medications that may be Weight Neutral or have Potential for Weight LOSS
Antipsychotics	<ul style="list-style-type: none"> ■ Quetiapine ■ Clozapine ■ Olanzapine ■ Risperidone ■ Thioridazine 	<ul style="list-style-type: none"> ■ Aripiprazole ■ Haloperidol ■ Ziprasidone
Antidepressants	<ul style="list-style-type: none"> ■ Mirtazapine ■ Selective serotonin reuptake inhibitor (e.g., paroxetine, sertraline, citalopram^b, escitalopram^b, fluoxetine^b) ■ MAOIs (e.g., phenelzine) ■ Tricyclic anti-depressants (e.g., amitriptyline, clomipramine, doxepin, imipramine, nortriptyline, protriptyline^b) 	<ul style="list-style-type: none"> ■ Bupropion ■ Desvenlafaxine ■ Venlafaxine
Antiepileptic drugs or mood stabilizing agents	<ul style="list-style-type: none"> ■ Gabapentin ■ Pregabalin ■ Carbamazepine ■ Divalproex ■ Lithium ■ Valproic acid ■ Vigabatrin 	<ul style="list-style-type: none"> ■ Topiramate ■ Lamotrigine ■ Zonisamide

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Sidebar 2: Select Medications and their Potential Effects on Weight ^a		
Medication Classes	Medications with Potential for Weight Gain	Medications that may be Weight Neutral or have Potential for Weight Loss
Antihyperglycemic agents	<ul style="list-style-type: none"> ■ Insulin ■ Sulfonylureas (e.g., chlorpropamide, glimepiride, glipizide, glyburide) ■ Meglitinides (e.g., nateglinide, repaglinide) ■ Thiazolidinediones (e.g., pioglitazone, rosiglitazone) 	<ul style="list-style-type: none"> ■ GLP-1 agonists (e.g., semaglutide, liraglutide, exenatide, dulaglutide, lixisenatide) ■ SGLT2 inhibitors (e.g., empagliflozin, canagliflozin, dapagliflozin, ertugliflozin) ■ Metformin ■ Pramlintide ■ Alpha-glucosidase inhibitors (e.g., acarbose, miglitol) ■ Dipeptidyl-peptidase-4 inhibitors (e.g., alogliptin, linagliptin, saxagliptin, sitagliptin)
Beta-blockers	<ul style="list-style-type: none"> ■ Metoprolol ■ Atenolol ■ Propranolol 	<ul style="list-style-type: none"> ■ Carvedilol ■ Nebivolol <p>Note: Other alternative classes of antihypertensive medications may be an option depending on the indication (e.g., angina, heart failure, HTN, migraine) consider calcium channel blockers, angiotensin-converting enzyme inhibitor, ARBs, and thiazide or loop diuretics, as indicated</p>
Alpha-blockers	Terazosin	For benign prostatic hyperplasia (e.g., doxazosin; alfuzosin, tamsulosin)
Glucocorticoids	<ul style="list-style-type: none"> ■ Prednisone ■ Hydrocortisone ■ Methylprednisolone 	<p>Alternatives for rheumatologic disorders:</p> <ul style="list-style-type: none"> ■ NSAIDs ■ Biologics/Disease-modifying antirheumatic drugs ■ Nontraditional therapies
Hormonal agents	Progestins (e.g., medroxyprogesterone, megestrol acetate)	For contraception, consider alternative methods (e.g., copper intrauterine device)

Sidebar 2: Select Medications and their Potential Effects on Weight^a

Medication Classes	Medications with Potential for Weight Gain	Medications that may be Weight Neutral or have Potential for Weight Loss
Antihistamines	<ul style="list-style-type: none"> ■ Cetirizine ■ Cyproheptadine 	Depending on symptoms, consider ipratropium nasal spray, decongestants, inhalers, nonpharmacologic measures (e.g., nasal irrigation)

^a The information provided in the table is not to be considered all-inclusive and is a compilation of information from the medical literature (systematic reviews, meta-analyses, subgroup analysis of clinical trials, cohort studies, reviews), some of which may have included differing comparators with variable results based on length of follow-up, baseline weight, patient comorbidities, etc.; medical and pharmacy resources; and select product information (adverse events, post-marketing and case reports)

^b Weight gain and weight loss have been reported

Abbreviations: ARB: angiotensin receptor blocker; GLP-1: glucagon-like peptide-1 receptor; HTN: hypertension; MAOI: monoamine oxidase inhibitor; NSAID: nonsteroidal anti-inflammatory drug; SGLT2: sodium-glucose cotransporter 2

Sidebar 3: Assessment of Patients with Overweight or Obesity

- Assess for presence of obesogenic medications (see Sidebar 2 on pharmacotherapy)
- Consider assessing waist circumference for patients with a BMI of 25 – 29.9 kg/m² (see Standards of Care of guidelines)
- Assess for common overweight and obesity-associated conditions (see Sidebar 1)
- Assess for secondary causes of overweight or obesity if physical exam and history warrant, including but not limited to: depression, binge eating disorder, hypothyroidism, hypercortisolism (Cushing’s disease or syndrome), traumatic brain injury, brain tumor, cranial irradiation, hypogonadism, menopause, acromegaly
- Assess the potential benefit of starting pharmacotherapy and/or bariatric procedure
- Assess conditions for which weight loss may not be beneficial (e.g., sarcopenia, active carcinoma, some eating disorders)

Abbreviations: BMI: body mass index

Sidebar 4: Principles and Core Strategies of Motivational Interviewing

- Respect autonomy and resist directing
- Understand the patient’s motivations
- Listen with empathy
- Empower the patient by building confidence
- Ask **O**pen-ended questions to evoke change talk and provide **A**ffirmations, **R**eflections, and **S**ummaries (OARS)
- For more information refer to the guide, “Moving Veterans To MOVE!”^a

^a Available at: <https://www.move.va.gov/>

Sidebar 5: Comprehensive Lifestyle Intervention

- Defined as an intervention that combines behavioral, dietary, and physical activity components together (see Recommendation 1 and Standards of Care in guidelines)
- The intervention can be delivered in an individual or group setting, in person, by telephone, or through synchronous video (see Recommendation 1 and Recommendation 4).
- Though there is insufficient evidence to recommend a specific number of sessions of comprehensive lifestyle intervention, most CLIs offer at least 12 intervention sessions in the first 12 months of intervention (see Recommendation 2)

Abbreviations: CLI: comprehensive lifestyle intervention

Sidebar 6: Assessment for Pharmacotherapy and/or Bariatric Procedures

In addition to CLI, consider pharmacotherapy and/or bariatric procedures in the following scenarios:

Consider for long-term pharmacotherapy (see Appendix H in guidelines):

- Patients with a BMI ≥ 30 kg/m²
- Patients with a BMI ≥ 27 kg/m² and an obesity-related comorbidity (see Table H-1 in guidelines)
- Individualize choice of medication to patient-specific comorbidities, dosing, administration, and potential for side effects

Consider for bariatric procedures (see Appendix I in guidelines):

- Patients with a BMI ≥ 30 kg/m² and T2DM
- Patients with a BMI ≥ 35 kg/m² and an obesity-related comorbidity
- Any patient with a BMI ≥ 40 kg/m²

Abbreviations: BMI: body mass index, CLI: comprehensive lifestyle intervention; T2DM: type 2 diabetes mellitus

shake, protein bar, or meal), when provided in conjunction with a CLI, was also found to support weight loss in a SR of 23 randomized control trials (RCTs) ($n = 7,884$).¹⁴ Patients may recognize the need to achieve a negative energy balance to lose weight; however, providers have an important role in discussing a patient's medical condition(s) and dietary preferences to help guide them to the dietary approach to which they will best be able to adhere long term. Many CLI programs will work as an interdisciplinary team and involving a dietitian may be helpful. (Additional information on dietary approaches can be found in the 2020 to 2025 Dietary Guidelines for Americans and The Academy of Nutrition and Dietetics (AND) Evidence Analysis Library.)

Physical activity also has an important role in weight loss; evidence suggests that it should be combined with dietary and behavioral elements. The studies included in the 2018 USPSTF SR⁹ included physical activity components that generally promoted at least 150 minutes of moderate-intensity activity per week. Many physical activity approaches yielded benefit, including aerobic, resistance, and/or lifestyle physical activity. Two additional SRs showed an improvement

in weight loss when physical activity was combined with a diet-alone component.^{19,20}

Pharmacotherapy is an additional tool in helping patients lose weight and/or maintain weight loss, in combination with CLI. The evidence base was comprised of one large, comprehensive SR and meta-analysis that included 28 RCTs ($n = 29,018$).²¹ All clinical trials of pharmacotherapy were conducted in conjunction with a CLI, and study medication was generally administered concurrently. Based on the meta-analysis, patients who received fixed-combination phentermine/topiramate had the highest probability of achieving a 5% or 10% weight loss, followed by liraglutide, fixed-combination naltrexone/bupropion, and orlistat. (Lorcaserin was removed from the U.S. market on February 13, 2020.) Evidence specifically supports the use of these agents, long term, in patients with a BMI of ≥ 30 kg/m², or ≥ 27 kg/m² with an obesity-associated condition. However, the treatment must be individualized due to the potential for adverse effects of these medications. This is especially true in patients who have comorbidities. Patients typically regain weight when weight loss medications are discontinued so

that many patients may require long-term therapy with medications approved for long-term use. Particular attention to weight gain as a common side effect from medications used to treat other medical illnesses and considering alternative agents that are weight neutral or promote weight loss can be of service to patients who have overweight or obesity. Careful medication review with elimination/substitution/weaning of any and all medications that produce iatrogenic weight gain is also a zero-cost intervention. See sidebar 2 of Figure 1 for medication weight effects assessment information.

There is little support, in the literature, for short-term use of medications for weight loss. As per the FDA, short-term medication use is defined as “a few weeks” of treatment. Medications that have been approved for short-term use by the FDA include benzphetamine, diethylpropion, phendimetrazine, and phentermine as monotherapy. These FDA approvals were based on studies conducted before 1975, which was outside of our evidence review. Our review did not find any current studies that evaluated these medications for short-term use. Our review found a single study with a small sample size that evaluated diethylpropion ($n = 28$ in that study arm) among four other agents for use over 52 weeks.⁴² This was considered insufficient evidence regarding their long-term use.

Dietary supplements and nutraceuticals are popular among patients, and the work group searched diligently for studies to support their use. However, the evidence supporting their use is lacking. Studies examining 23 of the most popular agents (see Table III) were queried. A combination of eight SRs and RCTs were identified and reviewed for this recommendation.^{24–31} The confidence in the quality of evidence was rated low to very low due to lack of adequate randomization, blinding, allocation concealment, and high risk of bias. Inconsistent dosing of specific nutraceuticals and lack of generalizability of findings were noted across multiple studies, suggesting poor study design. These studies failed to show clinically meaningful results. Also, the dietary supplements and nutraceuticals were generally not studied in conjunction with CLIs, so that there is insufficient evidence on whether the active dietary supplement or nutraceutical product would outperform placebo in conjunction with CLI. In addition to the lack of meaningful results, dietary supplements and nutraceuticals have a high cost. They burden patients with costs and additional pills and may divert patient interest and investment away from evidence-based interventions. As a result, we recommend that clinicians steer patients away from these products.

Metabolic/bariatric surgery is a modality that has increasing importance in affecting long-term weight loss. Evidence supports offering surgery at lower BMI in patients with T2DM.^{32,33} In fact, studies show that when bariatric surgery is offered to these patients, remission of T2DM can be achieved in as many as 90% of patients. The guideline development group recommends offering metabolic/bariatric surgery as an

TABLE III. Dietary Supplements and Nutraceuticals Reviewed

- Bitter orange (*Citrus aurantium* L.)
- Caffeine (as added caffeine or from guarana, kola nut, yerba maté, or other herbs)
- Chitosan
- Cinnamon
- Cissus quadrangularis
- Fenugreek (*Trigonella foenum-graecum* L.)
- Garcinia cambogia (*hydroxycitric acid*)
- Germanium (*teucrium*)
- Ginseng
- Glucomannan (*konjac root fiber*)
- Green coffee bean extract (*Coffea arabica*, *Coffea canephora*, *Coffea robusta*)
- Green tea (*Camellia sinensis*) and green tea extract
- Guar gum
- Hoodia (*Hoodia gordonii*)
- Raspberry ketone
- White kidney bean (*Phaseolus vulgaris*)
- Forskolin
- Dandelion
- Oregano
- *Gymnema sylvestre*
- Rosemary
- *Cuminum cyminum* L.
- Probiotics

option, in conjunction with CLI, to patients who have a BMI of ≥ 30 kg/m² and T2DM.

Our evidence review also found increasing evidence supporting metabolic/bariatric surgery in conjunction with CLI for patients who have a BMI ≥ 40 kg/m² or patients who have an obesity-associated condition(s) with a BMI ≥ 35 kg/m².^{34,35} Metabolic/bariatric surgery is known to have long-term sustained weight loss results, as well as cardiovascular and mortality benefits, and the body of evidence supporting its use is growing. As with all surgical intervention, this is tempered with the need to consider risk and benefit in the context of each patient’s comorbidities. Mortality risk is quite low from bariatric surgery, but it is not zero, and additional risks can include strictures, ulceration, bleeding, obstruction, venous thromboembolism and pulmonary embolus, infection, nutritional deficiencies, secondary hyperparathyroidism, and bone loss, degrees of which will depend on which procedure is performed, as well as rarer complications such as postprandial hyperinsulinemic hypoglycemia.

Historically, patients have not been offered the option of bariatric surgery when over the age of 65 years. The guideline group was unable to recommend metabolic/bariatric surgery for patients who are over the age of 65 years. Observational studies revealed, not surprisingly, that older patients had higher rates of complications after surgery.^{36,37} The workgroup felt that, for older patients, the decision to offer bariatric surgery is a clinical judgment based on individual patient risk factors and preferences. Evidence continues to show clinical benefit for this population; however, those benefits need to be

evaluated in the context of increased risks of the surgery as patients age.

Short-term Weight Loss (Up to 6 Months)

Obesity is a chronic condition that requires long-term management. Long-term maintenance of weight loss is the ultimate goal in order to reduce long-term complications due to overweight and obesity. Interventions with short-term benefit may be valuable to some patients with short-term weight loss needs, such as in preparation for surgical intervention or pregnancy, for example. Additionally, active duty service members have additional constraints, as they are not permitted to undergo permanent bariatric surgery procedures so that temporary and removable bariatric devices like the intra-gastric balloon (IGB) may provide an effective short-term, non-permanent alternative for active duty service members, or for civilians who are unwilling to consider irreversible surgical interventions. For active duty service members, not meeting their weight requirements can have significant effects on their careers. It should be noted again that all weight loss interventions with either short-term or long-term goals should always be accompanied by CLI. It is also important to discuss with patients that any weight loss strategy that is discontinued is likely to result in subsequent weight regain.

Our review of the current evidence found two interventions that had a short-term positive impact on weight loss at 6 months. These interventions included the use of an IGB, which are currently FDA approved only for 6-month use, and a low carbohydrate diet specifically over a low-fat diet at 6 months only.

Intra-gastric balloons, when combined with CLI, may be beneficial for patients with BMI >30 kg/m² who have prioritized short-term weight loss. Currently, the FDA has approved these devices for use for up to 6 months. The balloons can be placed in the stomach either endoscopically or by swallowing the deflated device. Intra-gastric balloons are typically managed, placed, and removed by a gastroenterologist or bariatric surgeon. The use of these devices has shown greater reductions in weight, BMI, waist circumference, and percent body fat to a greater degree than lifestyle interventions or sham therapy alone.^{38,39} There was insufficient evidence to recommend for or against IGBs for long-term weight loss.

Evidence also supports the use of a low-carbohydrate diet of $\leq 40\%$ of calories from carbohydrate or ≤ 120 g of carbohydrate a day, over a low-fat diet, for patients who prioritize short-term (up to 6 months) weight loss.^{40,41} The specifics of the diets varied substantially from study to study, however, and included several studies with induction phases of ≤ 20 g of carbohydrates per day; however, low-carbohydrate diets yielded greater weight loss than low-fat/low-calorie diets at 6 months. Both diets were equally successful for weight loss at the 1- and 2-year time points. There was insufficient evidence to compare head to head any other dietary approaches. A variety of diets can achieve long-term

weight loss success, and no one diet was superior to others at longer-term time points. The work group recognizes that the dietary approach most appropriate for each patient is determined by what the patient can adhere to and sustain for weight loss and maintenance. The input that the group received from patients was that they want specific information about effective dietary approaches, with some favoring short-term goals, while others may find that following a low-carbohydrate diet does not meet their food preference or would not be feasible long term.

CONCLUSION

Regardless of pharmacotherapy or procedure choice, CLIs that include behavior, dietary, and physical activity changes remain the scaffold onto which all additional weight loss tools are layered. Obesity is a chronic disease that requires lifelong management.

Despite the progress that has been made since the publication of the 2014 VA/DoD Obesity CPG in identifying effective interventions to assess and treat overweight and obesity in adults, many important gaps remain. In particular, the impact of weight management interventions on long-term outcomes, including long-term maintenance of weight loss, quality of life, non-alcoholic fatty liver disease, cardiovascular morbidity (e.g., Myocardial Infarction (MI) and ischemic stroke), and all-cause mortality. Additionally, BMI may not be the best predictor of future disease and mortality. Future trials should include more recently developed classification systems to characterize obesity severity, including use of body composition measures that are relevant to military service and readiness. The positive impact of metabolic/bariatric surgery is exciting for long-term weight management and needs more research to continue to validate the important role it may have in the future for improving morbidity and mortality. In terms of pharmaceutical options, data on safety and efficacy of multi-agent (two or more) regimens that may be synergistic for weight management are lacking. Further research into the underlying biology of food intake and body weight regulation is needed to provide new pharmacotherapeutic targets. Gaps also remain regarding the efficacy of alternative technologic modalities of lifestyle interventions. Data on comparative cost-effectiveness among weight management interventions would also be of significant interest. Finally, we do not have sufficient data on whether there are individual differences (e.g., racial/ethnic, genetic, socioeconomic, geographic, and psychological), or presence of specific comorbidities such as spinal cord injury/disorder or polycystic ovarian syndrome, which would predict response to a specific CLI, a specific pharmacotherapy, or a specific bariatric procedure. Research in these areas will advance our ability to successfully manage the chronic conditions of overweight and obesity.

The full clinical practice guideline is available to the public at www.healthquality.va.gov/guidelines/CD/obesity.

SUPPLEMENTARY MATERIAL

Supplementary material is available at *Military Medicine* online.

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CONFLICT OF INTEREST STATEMENT

None declared.

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