Pharmacology and Pediatric Obesity Management: Discussion of Medications

Wendy L. Wright, DNP, ANP-BC, FNP-BC, FAANP, FAAN, FNAP

1

Wendy L. Wright,

DNP, FNP-BC, NP-C, FAANP, CSP, FAAN, DCC, FNAP

Adult/Family Nurse Practitioner

Owner,
Wright & Associates Family Healthcare, Amherst, NH

Owner,
Partners in Healthcare Education, LLC

Chief Clinical Officer,
Duet Technologies, Inc.

Faculty,
Fitzgerald Health Education Associates, Lawrence, MA

2

2

Disclosures

- Sanofi, Pfizer, Moderna, Seqirus, and Merck:
  - Advisory Board and Speaker bureau
  - Vaccines
- AstraZeneca
  - Advisory Board and Speaker bureau
  - Asthma and COPD
- Exact Sciences
  - Advisory Board and Speaker bureau
  - Colorectal cancer
- Axsome
  - Speaker bureau
  - Migraines and Major Depressive Disorder
- AbbVie
  - Advisory Board
  - Migraines
- Pfizer
  - Speaker bureau
  - Migraines
- GSK
  - Consultant
  - OA and Pain; and Vaccines

3

3

Disclosures

- No real or potential conflict of interest to disclose.
- No experimental or investigational use of drugs or devices will be presented.
- Off-label use will be identified as such if discussed.

4

4

Tips

- References
  - Listed throughout and at the end of the presentation

5

5

Objectives

1. Discuss the statistics regarding obesity.
2. Identify the various pharmacologic agents to treat overweight and obesity in children/adolescents.
3. Compare pharmacologic strategies for weight stabilization or loss in the overweight or obese child/adolescent.

6

6

Obesity, if Multifactorial

- Genetic
- Environmental
- Immune
- Endocrine
- Medical
- Neurobehavioral

7

7

Definition of Obesity

"Obesity is defined as a chronic, progressive, relapsing, and treatable multi-factorial, neurobehavioral disease, wherein an increase in body fat promotes adipose tissue dysfunction and abnormal fat mass physical forces, resulting in adverse metabolic, biomechanical, and psychosocial health consequences."

Obesity Medicine Association, 2021 Definition of Obesity

8

8

Today…

- 108 million Americans with hypertension
- 78 million adults in the United States qualify for a statin.
- 108 million Americans living with obesity; yet it is often not treated in the same way.

9

9

What About Children?

- One in five (20%) U.S children and adolescents are living with obesity (2021-2023).
  - In 1971-1974, this number was 5.2%.
- Percent of children with severe obesity is now seven percent.

https://www.cdc.gov/obesity/data-and-statistics/index.html accessed 02-01-2026

10

10

Screening and Diagnosis

11

11

Sarah E. Hampl, Sandra G. Hassink, Asheley C. Skinner, Sarah C. Armstrong, Sarah E. Barlow, Christopher F. Bolling, Kimberly C. Avila Edwards, Ihuoma Eneli, Robin Hamre, Madeline M. Joseph, Doug Lunsford, Eneida Mendonca, Marc P. Michalsky, Nazrat Mirza, Eduardo R. Ochoa, Mona Sharifi, Amanda E. Staiano, Ashley E. Weedn, Susan K. Flinn, Jeanne Lindros, Kymika Okechukwu; Clinical Practice Guideline for the Evaluation and Treatment of Children and Adolescents With Obesity. *Pediatrics* February 2023; 151 (2): e2022060640. 10.1542/peds.2022-060640

12

12

Practical Diagnosis

- Weight
  - Easily understood by all
- Height
  - Allows you to calculate the BMI
- BMI
- BMI percentiles

13

13

Screening

- Health care providers should screen all children ages 2 – 18 years annually for overweight and obesity
- BMI vs. BMI percentiles in children
  - Overweight: BMI at or above 85th percentile but below 95th percentile for age and sex
  - Obesity: BMI is 95th percentile or greater for age and sex
  - Severe obesity: BMI is = or greater than 120% above the 95th percentile

14

14

Body Mass Index Chart

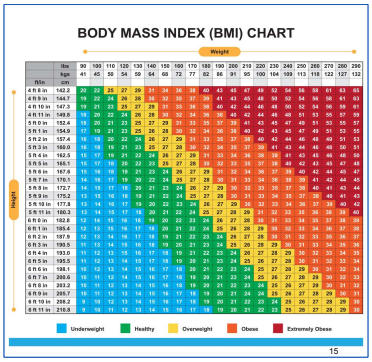


Image source: https://www.shutterstock.com/image-vector/body-mass-index-bmi-chart-1610175649

15

15

Medical Complications of Obesity

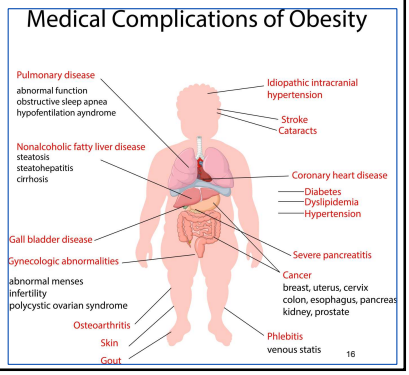
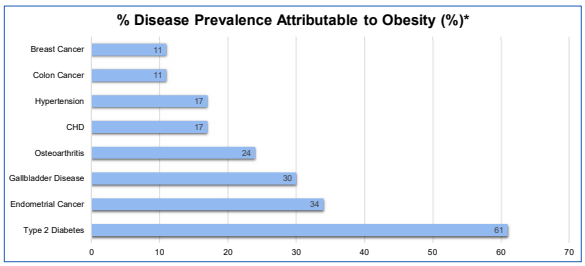


Image source: https://www.shutterstock.com/image-vector/illustration-medical-complication-obesity-341163110

16

Proportion of Disease Prevalence Attributable to Obesity



*Obesity defined as BMI ≥29 kg/m²

Image source: Semlitsch, T., Stigler, F.L., Jeitler, K., Horvath, K., Siebenhofer, A. (2019). Management of overweight and obesity in primary care-A systematic overview of international evidence-based guidelines. *Obes Rev*., 20(9):1218-1230. https://onlinelibrary.wiley.com/doi/full/10.1111/obr.12889

17

17

Obesity is associated with 60 comorbidities, most of which are improved or reduced with weight loss.

18

18

New Goals of Weight Loss

"The initial goal of weight loss therapy for overweight patients is to decrease body weight by about 10%. Moderate weights loss (of this magnitude) can significantly decrease the severity of obesity-associated risk factors."

~NIH/NHLBI

Wing, R.R. et al. (2011) Look AHEAD Research Group. (2011). Benefits of modest weight loss in improving cardiovascular risk factors in overweight and obese individuals with type 2 diabetes. *Diabetes Care*, 34(7):1481-6. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3120182/

19

19

Adipose Tissue: Subcutaneous vs. Visceral

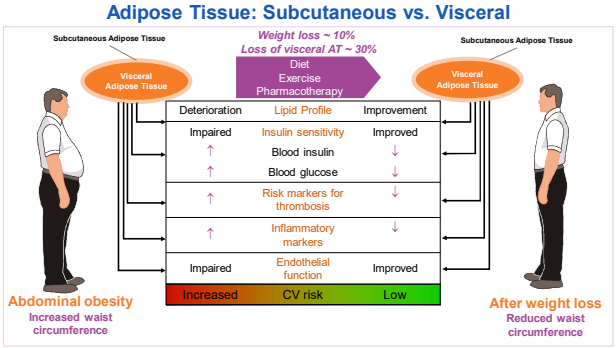


Image source: Adapted from Després, J.P., Lemieux, I., Prud'homme, D. (2001). Treatment of obesity: need to focus on high risk abdominally obese patients. *BMJ.*, 322(7288):716-20. https://pubmed.ncbi.nlm.nih.gov/11264213/

20

20

AACE: Weight Loss Goals

- Metabolic syndrome
  - 10% to prevent diabetes
- Prediabetes
  - 10% to prevent diabetes
- Type 2 diabetes
  - 5-15% or more to reduce A1C, reduce medications, achieve diabetes remission
- Dyslipidemia
  - 5-15% or more to reduce triglycerides and increase HDL
- Hypertension
  - 5 – 15% or more to lower both systolic and diastolic blood pressure and reduce hypertensive drugs
- Asthma/reactive airway disease
  - Improve FEV1 and reduce symptoms

Nadolsky K, Garvey WT, Agarwal M, Bonnecaze A, Burguera B, Chaplin MD, Griebeler ML, Harris SR, Schellinger JN, Simonetti J, Srinath R, Yumuk V. American Association of Clinical Endocrinology Consensus Statement: Algorithm for the Evaluation and Treatment of Adults with Obesity/Adiposity-Based Chronic Disease - 2025 Update. Endocr Pract. 2025 Nov;31(11):1351-1394. doi: 10.1016/j.eprac.2025.07.017. Epub 2025 Sep 16. PMID: 40956256.

21

21

AACE: Weight Loss Goals

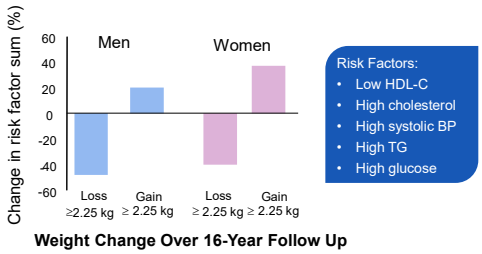
- Hepatic steatosis
  - 5 – 10% to reduce progression risk
- Obstructive sleep apnea
  - 7 – 10% to reduce events
- Osteoarthritis:
  - 5 – 10% to reduce symptoms/pain
- GERD
  - 5-10% to reduce symptoms

Nadolsky K, Garvey WT, Agarwal M, Bonnecaze A, Burguera B, Chaplin MD, Griebeler ML, Harris SR, Schellinger JN, Simonetti J, Srinath R, Yumuk V; American Association of Clinical Endocrinology Consensus Statement: Algorithm for the Evaluation and Treatment of Adults with Obesity/Adiposity-Based Chronic Disease - 2025 Update. Endocr Pract. 2025 Nov;31(11):1351-1394. doi: 10.1016/j.eprac.2025.07.017. Epub 2025 Sep 16. PMID: 40956266.

22

22

Change in Weight and CHD Risk Factor Clustering: Framingham Offspring Study



Weight Change Over 16-Year Follow Up

Image source adapted from Wilson, P.W., Kannel, W.B., Silbershatz, H., D'Agostino, R.B. (1999). Clustering of metabolic factors and coronary heart disease. *Arch Intern Med.*, 159(10):1104-9. https://pubmed.ncbi.nlm.nih.gov/10335688/

23

23

Selected Medications that Can Cause Weight Gain

- Psychotropic medications
  - Tricyclic antidepressants
  - Monoamine oxidase inhibitors
  - Specific SSRIs
  - Atypical antipsychotics
  - Lithium
  - Specific anticonvulsants
- β-adrenergic receptor blockers

SSRI=Selective serotonin reuptake inhibitor

24

24

NHLBI Guidelines: A Guide to Selecting Treatment for Obesity in Adults

Treatment	BMI (kg/m²) Category				
	Overweight 25–26.9	Overweight 27–29.9	Obesity (Class 1) 30–34.9	Obesity (Class 2) 35–39.9	Extreme Obesity (Class 3) ≥40
Diet, physical activity, and behavior therapy	✓ (With comorbidities)	✓ (With comorbidities)	✓	✓	✓
Pharmacotherapy		✓ (With comorbidities)	✓	✓	✓
Surgery			✓ (With comorbidities)	✓ (With comorbidities)	✓ (With comorbidities)

BMI=Body mass index; NHLBI=National Heart, Lung, and Blood Institute, division of National Institute of Health (NIH).

Image source: Table adapted from NHLBI. (2000). The Practical Guide: Identification, Evaluation, and Treatment of Overweight and Obesity in Adults. NIH Publication 00-4084. https://www.nhlbi.nih.gov/files/docs/guidelines/prctgd_c.pdf

25

25

The Modalities of Obesity Treatment

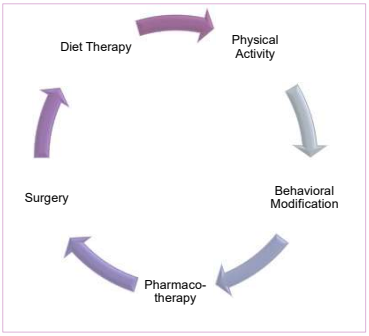


Image source: Table adapted from NHLBI. (2000). The Practical Guide: Identification, Evaluation, and Treatment of Overweight and Obesity in Adults. NIH Publication 00-4084. https://www.nhlbi.nih.gov/files/docs/guidelines/prctgd_c.pdf

26

26

CDC/AAP Recommendations for Children/Adolescents

- Diet modification, including the importance of school lunches
  - Reducing soda and sweetened juices
  - Choosemyplate.gov
  - Avoid skipping breakfast
- Exercise/physical activity
  - 60 minutes of activity daily
  - Reducing sedentary behaviors
  - Appropriate amount of sleep

27

27

We have become sedentary.

- A child who spends more than 3 hours per day on any sedentary activity is 50% more likely to develop obesity than children who watch <2 hours per day.
- Children, ages 8 to 18 years, spend more time (44.5 hours per week) in front of a computer, a television, and video games than any other activity in their lives except for sleeping.

Kaiser Family Foundation, 2005
http://www.mediafamily.org/facts/facts_tvandobchild.shtml accessed 02-01-2026

28

28

Medications

29

29

Other Major Messages from 2013 Obesity Guidelines

- Who needs to lose weight?
  - BMI ≥30 kg/m^2 or BMI ≥25 kg/m^2 with a risk factor (e.g., elevated waist circumference)
- You don't need to get your patients to an ideal weight.
  - Modest weight loss has major health benefits.
- There is no magic diet for weight loss.
  - It's about a calorie deficit.
  - Choose the diet composition based on the patient's health status and preference.

Cornier, M.-A. (2022). A review of current guidelines for the treatment of obesity. *The American Journal of Managed Care, 28*(suppl 15), S288-S296. https://www.ajmc.com/view/review-of-current-guidelines-for-the-treatment-of-obesity

30

30

Slide 28

RK1 Wendy, please see source #12...goes to: https://raddien.com/ (not correct). I found a possible alternative source listed below the slide.
Renee Kirshner, 2023-07-18T16:16:16.496

WW1 0 Okay to use alternative
Wendy Wright, 2023-07-23T15:41:58.323

Other Major Messages from 2013 Obesity Guidelines

- Everyone who needs to lose weight should have access to a comprehensive lifestyle intervention program with 14 sessions in 6 months and follow-up for a year.
  - If your patient doesn't have access to a comprehensive program in a medical or community setting, a commercial program with an evidence-base to recommend is acceptable.

31

31

History of Medications Utilized for the Treatment of Obesity

Date	Medication	Problems
1890s	Thyroid	Hyperthyroid
1930s	Dinitrophenol	Cataracts and neuropathy
1930s	Amphetamines	Addiction
1960s	Digitalis and diuretics	Death
1970s	Aminorex	Pulm HTN
1996–7	(Dex)fenfluramine and phentermine	Valvular disease

32

32

Why Use Pharmacotherapy?

- Rationale
  - Patients can lose an average of 4–20% more with medication than diet and exercise alone.

33

33

Pharmacotherapeutic Options

Drug	Class	Short/ Long Term	Schedule	Efficacy 2
Phentermine	Sympathomimetic amine anorectic	Short term	IV	3.6 kg (7.9 lb); 2–24 wk
Diethylproprion	Sympathomimetic amine anorectic	Short term	IV	3.0 kg (6.6 lb); 6–52 wk
Orlistat	Lipase inhibitor	Long term	n/a	2.9–3.4 kg (6.5–7.5 lb), 2.9–3.4%; 1 y
Alli	Lipase inhibitor	Long term	n/a	2.9–3.4 kg (6.5–7.5 lb), 2.9–3.4%; 1 y
Phentermine/ Topiramate	Sympathomimetic amine anorectic/ Antiepileptic analogue	Long term	IV	6.6 kg (14.5 lb) (recommended dose), 6.6% 8.6 kg (18.9 lb) (high dose), 8.6%; 1 y
Naltexone/ Buproprion	Opioid antagonist / Antidepressant	Long term	n/a	4.8%; 1y

Am J Manag Care. 2022;28(suppl 15):S288-S296. doi:10.37765/ajmc.2022.89292
2 Apovian CM, Aronne LJ, Bessesen DH, et al. Pharmacological management of obesity: an endocrine Society clinical practice guideline. J Clin Endocrinol Metab. 2015;100(2):342-362. doi:10.1210/jc.2014-3415. doi:10.1210/jc.2015-1782

34

34

Pharmacotherapeutic Options

Drug	Class	Short/Long Term	Schedule	Efficacy 2
Liraglutide	GLP 1 receptor agonist	Long term	n/a	5.8 kg; 1 y
Semaglutide	GLP 1 receptor agonist	Long term	n/a	16-17kg, 68 weeks
Tirzepatide	GIP/GLP 1 receptor agonist	Long term	n/a	48 pounds, 72 weeks

Am J Manag Care. 2022;28(suppl 15):S288-S296. doi:10.37765/ajmc.2022.89292
2 Apovian CM, Aronne LJ, Bessesen DH, et al. Pharmacological management of obesity: an endocrine Society clinical practice guideline. J Clin Endocrinol Metab. 2015;100(2):342-362. doi:10.1210/jc.2014-3415. doi:10.1210/jc.2015-1782

35

35

Older Pharmacotherapies

Agent	Mechanism	Approval	Comments
Phentermine	Central noradrenergic	Short-term use DEA Schedule IV	Rare cases of pulmonary HTN and valvular heart disease have been reported.
Diethylproprion	Central noradrenergic	Short-term use DEA Schedule IV	Rare cases of pulmonary HTN have been reported.
Orlistat	Peripheral pancreate lipase inhibitor	Long-term use Not scheduled	Monitor renal function in patients at risk of renal impairment.

Drug Enforcement Agency (DEA). MPR. (n.d.). *Diethylpropion*. eMPR. Retrieved January 28, 2025, from https://www.empr.com/drug/diethylpropion/. Teva Pharmaceuticals USA. (2012, January). *Adipex-P® (phentermine hydrochloride USP, 37.5 mg) [Prescribing information]*. U.S. Food and Drug Administration. https://www.accessdata.fda.gov/drugsatfda_docs/label/2012/085128s060lbl.pdf

36

36

Phentermine

- Approved 16 years of age and older
- Short-term use
- 7.5 mg, 8 mg, 15 mg, or 37.5 mg
- Monitor – Blood pressure, heart rate
- Avoid use – CAD, cerebrovascular disease, pregnancy

37

37

Long Term Use of Phentermine

- Recommend monitoring patient monthly x 3 months
- If doing well and > 5% body weight reduction at 3 months, consider allowing patient to stay on longer than three months
- If longer than three months, monitor at least every 3 months with visit
- Limited long-term data (1-2 years)

Apovian CM, Aronne LJ, Bessesen DH, et al. Pharmacological management of obesity: an endocrine Society clinical practice guideline. J Clin Endocrinol Metab. 2015;100(2):342-362. doi:10.1210/jc.2014-3415. doi:10.1210/jc.2015-1782
Lewis, K. H., Fischer, H., And, J., Barton, L., Bessesen, D. H., Daley, M. F., Desai, J., Fitzpatrick, S. L., Horberg, M., Koebnick, C., Oshiro, C., Yamamoto, A., Young, D. R., & Arterburn, D. E. (2019). Safety and Effectiveness of Longer-Term Phentermine Use: Clinical Outcomes from an Electronic Health Record Cohort. Obesity (Silver Spring, Md.), 27(4), 591–602. https://doi.org/10.1002/oby.22430

38

38

AACE

- Neither phentermine nor diethylpropion are recommended in preferred medications by AACE
- Compelling indication to use these medications:
  - Cost

Nadolsky K, Garvey WT, Agarwal M, Bonnecaze A, Burguera B, Chaplin MD, Griebeler ML, Harris SR, Schellinger JN, Simonetti J, Srinath R, Yumuk V. American Association of Clinical Endocrinology Consensus Statement: Algorithm for the Evaluation and Treatment of Adults with Obesity/Adiposity-Based Chronic Disease - 2025 Update. Endocr Pract. 2025 Nov;31(11):1351-1394. doi: 10.1016/j.eprac.2025.07.017. Epub 2025 Sep 16. PMID: 40956256.

39

39

Orlistat

- Indications and dose
  - Approved by FDA, 1999
  - Approved in adolescents (age 12 years and older)
  - Indication: BMI ≥30 kg/m^2 or BMI ≥27 kg/m^2 with other risk factors
- Dosing
  - Rx: 120 mg TID with each meal (during or up to 1 hour after)
  - OTC: 60 mg TID with each meal (during or up to 1 hour after)

40

40

Orlistat

- Advise patients
  - Nutritionally balanced, reduced-calorie diet; approximately 30% of calories from fat
  - Take a multivitamin containing fat-soluble vitamins at bedtime.

41

41

Orlistat

- Contraindications and warnings
  - Contraindications
    - Pregnancy, chronic malabsorption syndrome, cholestasis
  - Warnings
    - Decrease cyclosporine exposure; rare cases of severe liver injury, increased levels of urinary oxalate
  - Adverse effects
    - Oily spotting, flatus with discharge, fecal urgency, fatty/oily stool, oily evacuation, increased defecation and fecal incontinence

42

42

Orlistat

43

43

Orlistat Plus Lifestyle Intervention for the Prevention of T2DM in Obese Patients

Four-year randomized placebo-control trial of 3,305 obese patients

https://diabetesjournals.org/care/article/27/1/155/26587/XENical-in-the-Prevention-of-Diabetes-in-Obese

DPP, Diabetes Prevention Program; T2DM, type 2 diabetes.

Torgerson JS, Hauptman J, Boldrin MN, Sjöström L. (2004). XENical in the prevention of diabetes in obese subjects (XENDOS) study: a randomized study of orlistat as an adjunct to lifestyle changes for the prevention of type 2 diabetes in obese patients. Figure 2., Diabetes Care, 27(1):155-61.

44

44

Orlistat Plus Lifestyle Intervention for the Prevention of T2DM in Obese Patients

- Four-year randomized placebo-control trial of 3,305 obese patients
  - "DPP-type" intervention: Patients lost 3.0 kg
  - Orlistat + "DPP- type" intervention: Patients lost 5.8 kg

45

45

AACE

- Orlistat:
  - Third line option for those with prediabetes, metabolic syndrome, and diabetes
  - Second line option: those with hypertension

Nadolsky K, Garvey WT, Agarwal M, Bonnecaze A, Burguera B, Chaplin MD, Griebeler ML, Harris SR, Schellinger JN, Simonetti J, Srinath R, Yumuk V; American Association of Clinical Endocrinology Consensus Statement: Algorithm for the Evaluation and Treatment of Adults with Obesity/Adiposity-Based Chronic Disease - 2025 Update. Endocr Pract. 2025 Nov;31(11):1351-1394. doi: 10.1016/j.eprac.2025.07.017. Epub 2025 Sep 16. PMID: 40956266.

46

Recently Approved Pharmacotherapies

Agent	Mechanism	Approval	Comments
Lorcaserin **Pulled from Market**	Specific 5-HT_{2C} (serotonin) receptor agonist	Approved June 2012 DEA Schedule IV	Generally well tolerated, not recommended in patients with severe or end-stage renal impairment
Phentermine/ Topiramate ER	Sympathomimetic Anticonvulsant (GABA receptor modulation, carbonic anhydrase inhibition, glutamate antagonism)	Approved July 2012 DEA Schedule IV	Requires dose titration; contraindicated in glaucoma; not recommended with history of kidney stones

DEA=Drug Enforcement Agency.

47

Phentermine/Topiramate ER

- Indication
  - BMI of ≥30 kg/m^2 (obese), or ≥27 kg/m^2 (overweight) with at least 1 weight-related comorbid condition (e.g., HTN, dyslipidemia, type 2 diabetes)
  - Approved for 12 years of age and older

Extended release (ER)

- Dosing
  - Phentermine 3.75 mg/topiramate 23 mg extended-release daily for 14 days then increase to 7.5 mg/ 46 mg daily. Maximum dose is 15 mg/92 mg.
  - Discontinue if 5% weight loss is not achieved after 12 weeks on maximum daily dose of 15 mg/ 92 mg.

Phentermine/Topiramate ER (Qsymia®). (2022). Prescribing information. https://qsymia.com/patient/include/media/pdf/prescribing-information.pdf

48

Phentermine/Topiramate ER

- Contraindications
  - Pregnancy (Category X), glaucoma, hyperthyroidism, during or within 14 days of taking MAOIs

49

49

Phentermine/Topiramate ER

- Warnings
  - Fetal toxicity
  - Increased heart rate
  - Suicide, mood and sleep disorders
  - Acute myopia and glaucoma
  - Cognitive impairment
  - Metabolic acidosis
  - Creatinine elevations
  - Hypoglycemia with diabetes meds

- Voluntary REMS program in place; pregnancy testing for those of childbearing potential advised before and during use

50

50

Phentermine/Topiramate ER

51

51

Phentermine/Topiramate ER on Weight Loss at 2 Years

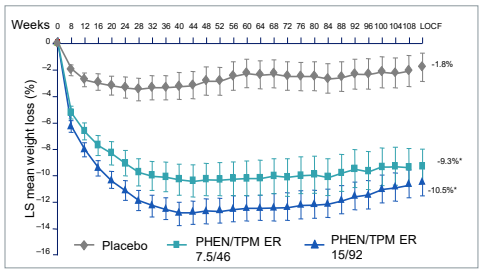
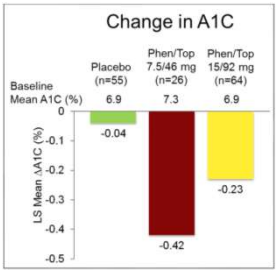


Image source: Used with permission from Wendy Wright.

52

52

Effects of Phentermine/Topiramate ER in Patients with T2DM: Two Years of Treatment



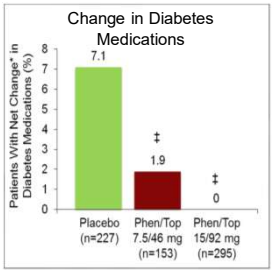


Image source: Used with permission from Wendy Wright.

53

53

Phentermine/Topiramate ER: Most Commonly Reported Adverse Events

Adverse Event (%) (N=3879)	Placebo	Phen/Top ER 7.5/46 mg
Paresthesia	1.9	13.7
Dry mouth	2.8	13.5
Constipation	6.1	15.1
Dysgeusia	1.1	7.4
Insomnia	4.7	5.8
Dizziness	3.4	7.2
Nausea	4.4	3.6

54

54

AACE: Phentermine/Topiramate

- First line option for those with:
  - Hypertension
- Second line option for those with:
  - Prediabetes, metabolic syndrome, diabetes
  - Obstructive sleep apnea

Nadolsky K, Garvey WT, Agarwal M, Bonnecaze A, Burguera B, Chaplin MD, Griebeler ML, Harris SR, Schellinger JN, Simonetti J, Srinath R, Yumuk V; American Association of Clinical Endocrinology Consensus Statement: Algorithm for the Evaluation and Treatment of Adults with Obesity/Adiposity-Based Chronic Disease - 2025 Update. Endocr Pract. 2025 Nov;31(11):1351-1394. doi: 10.1016/j.eprac.2025.07.017. Epub 2025 Sep 16. PMID: 40956256.

55

55

GLP-1 Agonists

56

56

Liraglutide

- Brand name: Saxenda®
- Dosage: 3 mg daily
- Indication: Obesity
  - BMI: 30 kg/m^2 or higher or 27 kg/m^2 with obesity related comorbidity
  - Approved for ages 12 years and older: >60 kg
  - Start at 0.6 mg/day once weekly; increase by 0.6 mg/day once weekly.
- Mechanism of action: GLP-1R agonist
- Adverse effects: Nausea

57

57

Liraglutide

- Efficacy
  - 62% of patients treated with liraglutide lost at least 5% of their body weight vs. 34% percent of patients treated with placebo.
  - Individuals with Type 2 diabetes had an average weight loss of 3.7% from baseline vs. placebo.
  - 49% of patients treated lost at least 5% of their body weight compared with 16% of patients treated with placebo.

58

58

Liraglutide

- Evaluate patient at week 16.
  - If patient has not lost 4% or more of body weight, can consider discontinuation of drug.
- Carries all same warnings as liraglutide (Victoza®)
  - Medullary thyroid carcinoma or multiple endocrine neoplasia syndrome
  - Pancreatitis
- No adjustment needed for renal impairment
- Associated with a REMS program
  - As was/is case with liraglutide (Victoza®)

59

59

Liraglutide

Now available in generic formulations

Two manufacturers have received approval

Lutton, L. (2024, December 24). FDA approves first once-daily generic of Victoza for type 2 diabetes. *Managed Healthcare Executive*. Retrieved September 8, 2025, from https://www.managedhealthcareexecutive.com/view/fda-approves-first-once-daily-generic-of-victoza-for-type-2-diabetes

60

60

AACE: Liraglutide

- Second line option for those with:
  - Prediabetes and metabolic syndrome
  - Diabetes
  - Hypertension
  - MACE prevention (in those with diabetes)

Nadolsky K, Garvey WT, Agarwal M, Bonnecaze A, Burguera B, Chaplin MD, Griebeler ML, Harris SR, Schellinger JN, Simonetti J, Srinath R, Yumuk V. American Association of Clinical Endocrinology Consensus Statement: Algorithm for the Evaluation and Treatment of Adults with Obesity/Adiposity-Based Chronic Disease - 2025 Update. Endocr Pract. 2025 Nov;31(11):1351-1394. doi: 10.1016/j.eprac.2025.07.017. Epub 2025 Sep 16. PMID: 40956296.

61

61

Semaglutide

- Semaglutide (Wegovy®)
- Class: GLP-1 agonist; injectable
- Indication: BMI 30 kg/m^2 or greater or 27.0 kg/m^2 or higher with comorbidity
  - Approved 12 years of age and older
- Dose: 0.25 mg once weekly × 4 weeks; then 0.50 mg once weekly × 4 weeks; 1.0 mg once weekly × 4 weeks; 1.7 mg once weekly × 4 weeks; then a maximum of 2.4 mg once weekly

Semaglutide (Wegovy®). (2022). Prescribing information. https://www.novo-pi.com/wegovy.pdf

62

62

Semaglutide

- Newest indication:
  - To reduce the risk of major adverse cardiovascular events (cardiovascular death, non-fatal myocardial infarction, or non-fatal stroke) in adults with established cardiovascular disease and either obesity or overweight
  - CMS has announced coverage of semaglutide for a patient meeting the above criteria

Novo Nordisk. (2026, February). *Wegovy (semaglutide) injection and tablets: Full prescribing information* [Prescribing information]. https://www.novo-pi.com/wegovy.pdf

63

63

Semaglutide

- Carries same warnings and precautions as GLP-1 agonists
- Okay in individuals with CKD
- Efficacy
  - Three double-blinded placebo-controlled trials; 2116 patients; Up to 68 weeks
  - Percent of patients losing ≥5% of body weight (31.1 vs. 83.5; 30.2 vs. 67.4; 47.8 vs. 84.8)
  - Percent of patients losing ≥10% of body weight (12.0 vs. 66.1; 10.2 vs. 44.5; 27.1 vs. 73.0)

64

64

Semaglutide

- Adverse effects
  - Nausea (44% vs. 16%)
  - Diarrhea (30% vs. 16%)
  - Vomiting (24% vs. 6%)
  - Constipation (24% vs. 11%)

65

65

New Formulation

- **Semaglutide (Wegovy) pill**
  - New formulation as a once-daily pill for weight management and cardiovascular risk reduction in people with obesity or who are overweight.
- 25 mg once daily dose
- Approved: 18 years of age and older

66

66

Oral Semaglutide

- 1.5 mg once daily for 30 days
- 4 mg daily - days 31 - 60
- 9 mg daily – days 61 - 90
- 25 mg daily day 91 - indefinitely

Novo Nordisk. (2026, February). *Wegovy (semaglutide) injection and tablets: Full prescribing information* [Prescribing information]. https://www.novo-pi.com/wegovy.pdf

67

67

Oral Semaglutide

- Efficacy:
  - 64-week medical study of 307 adults living with obesity
  - 14% weight loss vs. 2.4% placebo
  - 76% of adults taking oral semaglutide lost **5% or more weight** vs 31% of adults taking placebo
  - 60% of adults lost **10% or more weight** vs 14% of adults taking placebo
  - 47% of adults lost **15% or more weight** vs 6% of adults taking placebo

Novo Nordisk. (2026, February). *Wegovy (semaglutide) injection and tablets: Full prescribing information* [Prescribing information]. https://www.novo-pi.com/wegovy.pdf

68

68

AACE: Semaglutide

- First line option for those with:
  - Prediabetes and metabolic syndrome
  - Diabetes
  - Osteoarthritis
  - HFpEF
  - CKD
  - Hypertension
  - MASH
  - MACE prevention

Nadolsky K, Garvey WT, Agarwal M, Bonnecaze A, Burguera B, Chaplin MD, Griebeler ML, Harris SR, Schellinger JN, Simonetti J, Srinath R, Yumuk V. American Association of Clinical Endocrinology Consensus Statement: Algorithm for the Evaluation and Treatment of Adults with Obesity/Adiposity-Based Chronic Disease - 2025 Update. Endocr Pract. 2025 Nov;31(11):1351-1394. doi: 10.1016/j.eprac.2025.07.017. Epub 2025 Sep 16. PMID: 40956256.

69

69

Nonarteric Anterior Ischemic Optic Neuropathy

- Presents as vision loss or significant vision change
- < 0.1% of patient on GLP-1 drugs
- No differences between one vs. other

Nadia J. Abbass, Raya Nahlawi, Jacqueline K. Shaia, Kevin C. Allan, David C Kaelber, Katherine E. Talcott, Rishi P. Singh, The Effect of Semaglutide and GLP-1 RAs on Risk of Nonarteritic Anterior Ischemic Optic Neuropathy, American Journal of Ophthalmology, Volume 274, 2025, Pages 24-31.

70

70

Compounded Options

- Not recommended by AACE
- Not FDA approved
- Dosing is different than branded drugs which has led to numerous hospitalizations due to overdosing
- Other ingredients have been added to compounded agents i.e. B12, peptides etc.

Nadolsky K, Garvey WT, Agarwal M, Bonnecaze A, Burguera B, Chaplin MD, Griebeler ML, Harris SR, Schellinger JN, Simonetti J, Srinath R, Yumuk V. American Association of Clinical Endocrinology Consensus Statement: Algorithm for the Evaluation and Treatment of Adults with Obesity/Adiposity-Based Chronic Disease - 2025 Update. Endocr Pract. 2025 Nov;31(11):1351-1394. doi: 10.1016/j.eprac.2025.07.017. Epub 2025 Sep 16. PMID: 40956256.

71

71

Dietary Supplements for Weight Loss – A Systematic Review

- Five systematic reviews and meta-analyses, + 25 trials reviewed on the following…
  - Chitosan, chromium picolinate, Ephedra sinica, garcinia cambogia, glucomannan, guar gum, hydroxy-methylbutyrate, plantago psyllium, pyruvate, yerba maté, yohimbine
- Results: Evidence for reducing body weight is not convincing. None of the supplements reviewed can be recommended for OTC use.

Pittler, M.H., Ernst E. (2004). Dietary supplements for body-weight reduction: a systematic review. Am J Clin Nutr., 79(4):529-36. https://pubmed.ncbi.nlm.nih.gov/15051592

Batsis, J. A., Apolzan, J. W., Bagley, P. J., Blunt, H. B., Divan, V., Gill, S., Golden, A., Gundumraj, S., Heymsfield, S. B., Kahan, S., Kopatsis, K., Port, A., Parks, E. P., Reilly, C. A., Rubino, D., Saunders, K. H., Shean, R., Tabaza, L., Stanley, A., Tchang, B. G., … Kidambi, S. (2021). A Systematic Review of Dietary Supplements and Alternative Therapies for Weight Loss. Obesity (Silver Spring, Md.), 29(7), 1102–1113. https://doi.org/10.1002/oby.23110

72

72

“Questions?”

73

73

End of Presentation

- Thank you for your time and attention.
- Wendy L. Wright, DNP, ANP-BC, FNP-BC, FAANP, FAAN, FNAP
- Email: WendyARNP@aol.com

74

74

References

2013 AHA/ACC/TOS guideline for the management of overweight and obesity in adults: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines and The Obesity Society. *Circulation*,129(25 Suppl 2):S102-38. https://pubmed.ncbi.nlm.nih.gov/24222017/

American Psychological Association. (2010). The impact of food advertising on childhood obesity. https://www.apa.org/topics/obesity/food-advertising-children

Author unknown. (2023). The Nutrition Source. Walking for Exercise. Harvard T.H. Chan School of Public Health. https://www.hsph.harvard.edu/nutritionsource/walking/

Dansinger, M.L., Gleason, J.A., Griffith, J.L., Selker, H.P., Schaefer, E.J. (2005). Comparison of the Atkins, Ornish, Weight Watchers, and Zone Diets for Weight Loss and Heart Disease Risk Reduction: A Randomized Trial. *JAMA*, 293(1):43-53. https://jamanetwork.com/journals/jama/fullarticle/200094/

Hampl, S.E., et al. (2023). Clinical Practice Guideline for the Evaluation and Treatment of Children and Adolescents With Obesity. *Pediatrics,* 151(2):e2022060640. https://publications.aap.org/pediatrics/article/151/2/e2022060640/190443/Clinical-Practice-Guideline-for-the-Evaluation-and?autologincheck=redirected

75

75

References

Jensen, M.D., Ryan, D.H., Apovian, C.M., Ard, J.D., Comuzzie, A.G., Donato, K.A., Hu, F.B., Hubbard, V.S., Jakicic, J.M., Kushner, R.F., Loria, C., Millen, B.E., Nonas, C.A., Pi-Sunyer, F.X., Stevens, J., Stevens, V.J., Wadden, T.A., Wolfe, B.M.,…Tomaselli, G.F.; American College of Cardiology/American Heart Association Task Force on Practice Guidelines; Obesity Society. (2014).

Johns Hopkins (Bloomberg School of Public Health). (2005). Waist Size Linked to Diabetes Risk in Adult Men. https://publichealth.jhu.edu/2005/wang-waistsize

Manson, J.E., Greenland, P., LaCroix, A.Z., Stefanick, M.L., Mouton, C.P., Oberman, A., Perri, M.G., Sheps, D.S., Pettinger, M.B., Siscovick, D.S. (2002). Walking compared with vigorous exercise for the prevention of cardiovascular events in women. *N Engl J Med.*, 347(10):716-25. https://pubmed.ncbi.nlm.nih.gov/12213942/

Nordmann, A.J., Nordmann, A., Briel, M., Keller, U., Yancy, W.S. Jr., Brehm, B.J., Bucher, H.C. (2006). Effects of low-carbohydrate vs low-fat diets on weight loss and cardiovascular risk factors: a meta-analysis of randomized controlled trials. *Arch Intern Med.*, 166(3):285-93. https://pubmed.ncbi.nlm.nih.gov/16476868/

Obesity Algorithm 2021 PPT. 2021 Definition of Obesity. Obesity Medicine Association. Obesity medicine.org. https://obesitymedicine.org/wp-content/uploads/2021/01/2021-Obesity-Algorithm.pdf

Obesity Medicine Association. (2023). Obesity Algorithm®. https://obesitymedicine.org/obesity-algorithm/

76

76

References

Solan, M. (2023). Staying Healthy: Short bursts of exercise may offer big health benefits. Harvard Health Publishing Harvard Medical School website. https://www.health.harvard.edu/staying-healthy/short-bursts-of-exercise-may-offer-big-health-benefits

Tremblay, M.S., Willms, J.D. (2003). Is the Canadian childhood obesity epidemic related to physical inactivity? *International Journal of Obesity and Related Metabolic Disorders*, 27, 1100-1105 https://pubmed.ncbi.nlm.nih.gov/12917717/

Torgerson JS, Hauptman J, Boldrin MN, Sjöström L. (2004). XENical in the prevention of diabetes in obese subjects (XENDOS) study: a randomized study of orlistat as an adjunct to lifestyle changes for the prevention of type 2 diabetes in obese patients. Figure 2., Diabetes Care, 27(1):155-61. https://diabetesjournals.org/care/article/27/1/155/26587/XENical-in-the-Prevention-of-Diabetes-in-Obese

U.S. Department of Health and Human Services. (2018). Physical Activity Guidelines for Americans 2nd edition. https://health.gov/sites/default/files/2019-09/Physical_Activity_Guidelines_2nd_edition.pdf

77

77

Statement of Liability

- The information in this program has been thoroughly researched and checked for accuracy. However, clinical practice and techniques are a dynamic process, and new information becomes available daily.
- Prudent practice dictates that the clinician consult further sources prior to applying information obtained from this program, whether in printed, visual or verbal form.
- All websites listed active at the time of publication.

78

78