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I. This guideline is intended for the treatment of obesity with or without comorbid issues, with the exception of Type 2 diabetes, which is managed by Endocrine.

Background**:** Pediatric obesity continues to rise. The CDC states that 1 in 5 children and teens in the US are obese. By 2030, one in two adults will be obese.

According to the Obesity Medicine Association, "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" (OMA, 2024).

The AAP (2023) practice guidelines for pediatric obesity include being more rigorous in the treatment of teens with obesity including anti-obesity medications highlighting the two medications approved by the FDA. This document will discuss GLP-1RAs.

II. Components of Treatment**:**
- A. GLP-1RAs
  1. Liraglutide (Saxenda®); FDA approved for 12 years of age and up
  2. Semaglutide (Wegovy®); FDA approved for 12 years of age and up
  3. Tirzepatide (Zepbound®); for adults 18 years and up)
- B. With the increased use and demand of these medications, we see an increase in prescribing this class of medications, especially the GLP-1RAs, for teens.
- C. This class of medications comes with significant benefits and significant complications and side effects if not used and educated appropriately.
- D. Screening
  1. Qualification: diagnosis of obesity; BMI>= 95% for age and sex; some insurances may have other definitions or qualifications.
  2. Patient negative history for pancreatitis
  3. Negative family history of Medullary Thyroid cancer or MEN 2
  4. Absence of eating disorder or disordered eating
     a. Red flags to avoid use of GLP-1RAs
        1) Bulimia
        2) Anorexia with or without Bulimia
        3) ARFID
        4) Significant picky eating (eating fewer than 20 foods or completely avoiding a single food group)
        5) Binge eating (exceptions in some cases but requires collaboration with mental health provider)
     b. Use a validated screening tool if indicated and available
        1) Eating Disorder Examination Questionnaire – Short (EDE-QS): appropriate for ages 14+
        2) Eating Attitudes Test-26 (EAT-26)
  5. Mental health concerns: cannot be actively suicidal
  6. Pharmacokinetics: mental health, if diagnosed and treated for depression, anxiety, or other mental health disorders, medication interactions must be evaluated and collaboration with the teen's psychiatrist/psychologist is a must for care coordination
  7. Birth control: the female patient cannot be pregnant or planning to get pregnant
     a. Discussion with the PCP and teen for birth control method is paramount
     b. GLP-1RA will interfere with the efficacy of oral birth control to prevent pregnancy so a backup method must be used, or change the birth control method
        i. Tirzepatide has the most significant interference with oral contraceptives

8. Drug use: the patient cannot be using street drugs, cannabis, or alcohol
9. GI concerns: absence of GI dysmotility concern such as gastroparesis, cyclical vomiting syndrome, chronic nausea
10. Future surgery: if planning on having surgery, consult with the surgeon and anesthesiologist regarding the patient's GLP-1 RA; the medication does not have to be stopped if there is an absence of GI dysmotility. If there is GI dysmotility, they can be placed on a liquid diet 3 days prior to the surgery date (Kindel, et al, 2025). Current peri-operative guidelines of GLP-1 RA are being discussed at CW and a link may be provided to these guidelines when available.
11. Treatment Considerations
    a. Medications are meant to be an adjunct to, not a replacement for, behavior and lifestyle changes
    b. There may be times when a patient must go off their medication due to access issues or insurance regulations or challenges. It is important that patients realize this and put health-promoting habits into place so they can work to attenuate weight re-gain in these instances.
    c. It is required that nutritional counselling is provided to the patient and family prior to starting a GLP-1RA. It is encouraged that patients meet with a Registered Dietitian (RD) prior to starting GLP-1RA for a nutritional assessment and to ensure current nutritional status and lifestyle habits will support the goals of taking a GLP-1RA and will support the patient's weight loss in a health-promoting way. Nutritional counseling may be provided by the PCP if an RD is unavailable.
    d. Ensure patient/family has adequate needle disposal (sharps container) and is aware of how to safely dispose of sharps in their community.

E. GLP-1RA Medications:
1. The FDA stopped the use of compounded GLP-1RA medications in May 2025.
2. Off label use in children is not recommended; there is no current evidence of efficacy and safety documented in children under 12 years of age (this may change in the future).
3. Insurance coverage: the coverage for these medications can be based on insurance and can have a limitation on their use; this may change with the White House agreement with the pharmaceutical companies
4. Medications
    a. Semaglutide (Wegovy®)
        1) GLP-1RA, half-life is 7 days
        2) Given weekly, subcutaneously, via autopen one time use
        3) Refrigerated but can be at room temperature for up to 28 days
        4) Dose escalation is standardized by the manufacturer, but is individualized based on rate of weight loss and side effects
        5) Dose Escalation Schedule:

Semaglutide (Wegovy®)	
Week	**Weekly Dose**
1 through 4	0.25 mg
5 through 8	0.5 mg
9 through 12	1.0 mg
13 through 16	1.7 mg
17 and onward	2.4 mg (maintenance)

Note: if 2.4 mg dose is not tolerated, may decrease to 1.7 mg once weekly

b. Liraglutide (Saxenda®)
   1) GLP-1RA, half-life is ~13 hours
   2) FDA approved for 12 years of age and up
   3) Given daily, subcutaneously, via autopen injector that is dialed up to dose
   4) Unused pens need to be refrigerated but in use pens are good at room temperature for 30 days
   5) Dose escalation is standardized by the manufacturer, but is individualized based on rate of weight loss and side effects
   6) Dose Escalation Schedule:

Liraglutide (Saxenda®)	
Week	**Daily Dose**
1st Week	0.6 mg
2nd Week	1.2 mg
3rd Week	1.8 mg
4th Week	2.4 mg
5th Week and onward	3 mg (maintenance)

c. Tirzepatide (Zepbound®)
   1) Combination medication with GLP-1RA and GIP
   2) FDA Approved for adults 18 years and up
   3) Given weekly, subcutaneously, via autopen injector, single dose
   4) Needs to be refrigerated but can be at room temperature for up to 21 days
   5) Dose escalation is standardized by the manufacturer, but is individualized based on rate of weight loss and side effects
   6) Dose Escalation Schedule:

Tirzepatide (Zepbound®)	
Week	**Weekly Dose:**
1 through 4	2.5 mg
5 through 8	5 mg (maintenance)
9 through 12, if indicated	7.5 mg
13 through 16	10 mg (maintenance)
17 through 20	12.5 mg
21 and onward, if indicated	15 mg (maintenance)

Note: Maintenance dose based on patient's response

d. Semaglutide (Wegovy®) Pill
   1) GLP-1RA
   2) FDA Approved for adults 18 years and up

3) Taken daily, first thing in the morning, on an empty stomach
4) Taken with only 4 ounces of water, no more
5) Wait at least 30 minutes after taking the Wegovy® pill until the patient can take any additional oral medications, any beverages or food
6) Needs to stay in the specialized bottle it comes in
7) Dose escalation is standardized by the manufacturer, but is individualized based on rate of weight loss and side effects
8) Dose escalation schedule:

Oral Semaglutide (Wegovy®) pill	
Week	**Daily Dose:**
1 through 4	1.5 mg
5 through 8	4 mg
9 through 12	9 mg
13 through onward	25 mg (maintenance)

e. Medication Comparison:

Drug	**FDA Indication**	**Frequency**	**Starting Dose (Sub-Q)**	**Titration schedule (As tolerated)**	**Approximate Similar Doses**					
Tirzepatide (Zepbound)	Obesity > 18yo	Weekly	2.5 mg	Every 4 weeks	2.5 mg	5 mg	7.5 mg	10 mg	12.5 mg	15 mg
Liraglutide (Saxenda®)	Obesity > 12yo	Daily	0.6 mg	Weekly	0.6 mg	1.2 mg	1.8 mg	2.4 mg	3 mg	
Semaglutide (Wegovy)	Obesity > 12yo	Weekly	0.25 mg	Every 4 weeks		0.25 mg	0.5 mg	1 mg	1.7 mg	2.4 mg

5. Goal of Treatment
   a. Improved BMI and improvement or resolution of any co-morbidities
   b. Insurance companies may have a weight loss goal for re-certification (for example, Medicaid requires 5% weight loss in the first 6 months)
   c. Weight loss: goal of 0.5-2 pounds per week
      1) If weight loss is more than 2 pounds/week on average, a halt on escalation or dropping down to the previous dose is indicated (based on patient centered care, shared medical decision making, and clinician's recommendations)

F. Side Effects
1. Common Side Effects
   a. GI dysmotility: nausea, vomiting, constipation, diarrhea, GERD, sour burps

b. Hypoglycemia: uncommon side effect but can occur if skipping meals or waiting too long in between meals. Make sure that teens have a "snack pack" in their purse or backpack (currently no recommendations for monitoring blood glucose at home)
c. Nervous system: headache, fatigue
d. Mental health: may increase depression, anxiety, and suicidal ideation
e. Malnutrition: low protein, anemia, low vitamin B12, low vitamin D can occur – see Nutritional Priorities
f. Muscle loss has been documented in the adult literature; good protein intake, adequate micronutrient supplementation, and 3 days/week of weight bearing exercise or resistance training helps to preserve muscle mass

2. Side Effect Management
   a. It is clinically observed that beverages and foods that are high in sugar can exacerbate nausea, sour or sulfur burps, GERD, and vomiting.
   b. It is clinically observed that beverages and foods that are high in fat can cause belly pain and diarrhea
   c. For Wegovy®, nausea is typically seen the most in the first 1-3 days after giving the injection when the medication is the highest; it has been clinically observed that this improves if the teen is well hydrated the day before and the day of the injection.
      1) Can use Ondansetron (Zofran®) the day of the shot or afterwards for nausea or nausea with vomiting
         a) Ondansetron (Zofran®) 4mg or 8mg disengaging tablets can be given every 6-8 hours as needed (Up to Date, 2025)
         b) It is discouraged to use for long periods since it can cause prolonged QT
         c) If using it for long term, it is recommended to get an ECG to document normal sinus rhythm
   d. Vomiting that does not respond to Ondansetron (Zofran®) or there is a concern for dehydration, the family may contact the PCP who is prescribing the GLP-1RA or take the teen to the nearest ED for an evaluation.
   e. For significant abdominal pain with nausea and vomiting in the teen, the family needs to take the teen to the nearest ED for an evaluation for pancreatitis or gall bladder disease
      1) Pancreatitis and/or gall bladder work-up may include but is not limited to: CBC, CMP, lipase, and US of the pancreas and/or gall bladder
   f. Constipation can happen with a decrease in appetite. A fluid goal is important for the patient to maintain hydration (goal set by provider or RD)
      1) Options for constipation management:
         a) Polyethylene glycol 3350 (PEG 3350) (Miralax®), 1 capful in 8 ounces of fluids and taken by mouth 1-2 times daily as needed
         b) Docusate sodium (Colace®), 100 mg tablets, 2 by mouth 1-2 times daily as needed
   g. GERD management – can be related to the GI dysmotility or dietary influences
      1) Avoid sugary beverages and foods
      2) Eat slowly
      3) Eat three meals a day or 4 smaller meals a day
      4) Don't eat within 3 hours of going to bed
      5) Avoid spicy foods
      6) Avoid caffeine
      7) Medication management
         a) Famotidine (Pepcid®) dose specific to patient and symptoms at the discretion of the prescribing provider

b) Omeprazole (Prilosec®), dose specific to patient and symptoms at the discretion of the prescribing provider

G. Nutritional Priorities
1. Optimize nutrient density within calorie restriction
a. Use of GLP-1RAs significantly reduces overall energy intake; this is especially important to consider in adolescents who are still growing and developing
b. At least 64 oz fluids daily, or recommendations based on Holliday-Segar equation. Fluids may be better tolerated between meals than with meals
c. Micronutrients of concern include iron, calcium, magnesium, zinc, and vitamins A, D, E, K, B1, B12, and C, especially in those with pre-existing limited diets. A daily complete multivitamin with iron is strongly recommended
1) Can use ½ prescription strength prenatal vitamin daily if covered by insurance
2) Many multivitamins do not contain adequate calcium; may need to recommend separately
3) Avoid recommending gummy vitamins as they typically don't include iron, though Flintstone's Picky Kids + Iron is one gummy option
4) Target Up&UP ® or Walmart Equate® Kid's complete multivitamin is complete and includes iron
2. Support adequate protein intake to minimize the loss of lean mass (though lean mass is still lost even with "perfect" protein and exercise regimen
a. Protein intake
1) Aim for at least 60-90 grams of protein daily, or 1.0 to 1.5 g/kg body weight (though this may overestimate needs in patients with a very elevated BMI)
2) Lean protein source at each meal and snack
b. In adults, resistance training at least 3 times weekly plus at least 150 minutes of moderate-intensity aerobic exercise weekly is recommended to preserve muscle and bone mass
c. If available, handgrip strength as measured by a dynamometer can be used as a supportive measure for muscle mass/functional status. Frequency of measurements should align with the frequency of other growth/anthropometric reassessments
3. Focus on managing GI side effects to improve adherence and dietary adequacy
a. Eating at least three times daily; small, frequent meals are often better tolerated
b. Avoid high fat and/or high fiber foods based on side effects
c. Limit caffeine and/or sugar alcohols (found in sugar-free products)

H. Assessment/Follow-up Intervals
1. Provider (NP, PA, or MD) + RD (if available) every 2-3 months while ramping up; can space to every 3-4 months while on maintenance, based on the individual's management, goals, and response to treatment
a. It is required that the patient and family have a nutritional assessment and nutritional counselling prior to the initiation of a GLP-1RA medication by a RD (if available) or the provider (PCP).
2. Initial and follow-up Evaluation, including:
a. Anthropometrics
1) Checking weight, height, BMI, BP and HR
2) Evaluating weight: goal of 0.5-2 pounds/week of weight loss, on average; loss of more than 2 pounds/week is concerned for nutritional deficiencies
b. Include in History:
1) Medication
a) Medication name
b) Confirm dose
c) Date last given
d) Length of time on current dose
c. GI Dysmotility:
1) Nausea, vomiting, constipation, diarrhea; if so, when, how often, what are they using

2) Dose escalation may need to be paused or decrease a dose, or skip a dose depending on the side effects and weight loss

d. Hypoglycemia
   1) Episodes of dizziness, shakiness, sweating
   2) Number of episodes since last visit
      a) Review meal timing and avoiding meal skipping
e. Mental Health:
   1) If available - PHQ-9, any increased depression, anxiety, suicidal ideation compared to the previous PHQ-9
   2) Change in mental health medications, new medications, seeing therapist or psychiatrist?
   3) Change in disordered eating habits, behaviors, or thoughts
f. Response to GLP-1RA
   1) Amount of weight loss since last visit
      a) The goal is an average of weight loss is 0.5-2 pounds per week
   2) If loss is more than 2 pounds/week, assess for side effects like nausea, vomiting and diarrhea
      a) May need to pause on dose escalation, go back to previous dose or skip one dose then go down to the previous dose
g. Lifestyle changes that support and that are complemented by the GLP-1RA
   1) 4,3,2,1,0
   2) Concerns for skipping meals
   3) Protein & fluid intake
   4) Compliance with supplements
   5) Physical activity
h. Physical
   1) Concerns for hair shedding, nail breakage, dry skin
i. Monitoring labs
   1) Every 6 months, may include, not limited to and if indicated
      a) Metabolic and cardiac labs: Lipids, glucose, ALT, AST, hemoglobin A1c, serum creatinine
      b) Nutritional labs when indicated by symptoms: CBC, vitamin D, vitamin B12, thiamine, vitamin D, iron studies

I. Medication Management
1. Some teens may reach their goal BMI (percentage), improved or resolved co-morbidities
2. If they are getting close to the 85th%ile, they need to discuss weaning strategies to limit rebound weight gain
   a. Some teens may reach their goal BMI goal (percentage), improved or resolved co-morbidities.
   b. If they are getting close to the 85th%ile, they need to discuss weaning strategies to limit rebound weight regain
   c. Best way to limit rebound weight regain is to continue lifestyle changes; studies show that regain after weight management medications was faster if patients were not following a behavioral weight management program
3. Weaning options, if covered by insurance, can be:
   a. Weaning down weekly Wegovy® dose every month until they stop losing weight and maintain weight. If the goal is to wean off medications, they can give the lowest dose every other week for a period of doses and then stop.
   b. If unable to use lower Wegovy® doses, they can give the higher dose every other week, but can cause nausea and/or vomiting so Zofran® may need to be prescribed
   c. Transition to daily Saxenda®, then wean the Saxenda® down to the lowest dose and give every other day and continue to wean down and off if that is the goal; otherwise, wean down to the dose where they are maintaining weight and not losing weight

   d. If available and indicated, wean to oral weight loss medication
4. If their response to Wegovy® is not optimal or at the highest dose and they have turned 18 years of age, options for treatment may include but are not limited to:
   a. May increase to Wegovy® high dose 7.2 mg weekly (must be 18 years of age)
   b. The provider may transition the patient to Zepbound®. Side effects and nutritional concerns are the same, but some adults feel the side effects are less with Zepbound® than with Wegovy®
   c. Additionally, the provider may transition the patient to oral Wegovy® (approved at 18 years of age). Side effects and nutritional concerns are the same, but the oral tablet has specific guidelines of timing and how to take the medication. The oral form is a daily pill taken on an empty stomach first thing in the morning with only 4 ounces of water. The patient needs to wait at least 30 minutes before taking any additional medications, beverages or food.
5. For Wisconsin Medicaid patients:
   a. If the patient does not meet the weight goal (i.e. they do not re-qualify by losing 5% of their starting body weight by 6 months), the provider may prescribe Saxenda® (daily) for 6 months then transition the patient back to Wegovy® after 6 months
   b. If the patient qualifies at 6 months for an additional 6 months, at the end of the 12 months (total time on Wegovy®) and the patient requires additional treatment on a GLP-1RA, the provider may prescribe Saxenda® (daily) for 6 months, then transition back onto Wegovy®.
   c. Patients' response to Saxenda® may be different than Wegovy®, and the goal of Saxenda® is to minimize weight gain or maintain weight until the provider can re-start the patient on Wegovy®.
   d. Note that for pauses in treatment or missed doses, each medication has specific recommendations regarding what doses to resume treatment on/re-titration to previous dose levels.

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Medical Disclaimer

This Clinical Guideline (CG) is designed to provide a framework for evaluation and treatment. It is not intended to establish a protocol for all patients with this condition, nor is it intended to replace a clinician's judgement. Adherence to this CG is voluntary. Decisions to adopt recommendations from this CG must be made by the clinician in light of available resources and the individual circumstances of the patient. Medicine is a dynamic science; as research and clinical experience enhance and inform the practice of medicine, changes in treatment protocols and drug therapies are required. The authors have checked with sources believed to be reliable in their effort to provide information that is complete and generally in accord with standards accepted at the time of publication. However, because of the possibility of human error and changes in medical science, neither the authors nor Children's Hospital and Health System, Inc., nor any other party involved in the preparation of this work warrant that the information contained in this work is in every respect accurate or complete, and they are not responsible for any errors in, omissions from, or results obtained from the use of this information.