SOUTHWEST IDAHO AHEC
Students, Professionals, Community

Children and Adolescents with Obesity:
Evaluation, Interventions, and the Evidence

PRESENTED BY: BRAYDEN H. CHAMBERLAIN, MD

DATE: 11/13/2024

Accreditation & Disclosures

Accreditation Statement

In support of improving patient care, this activity has been planned and implemented by Southwest Idaho Area Health Education Center and the University of Idaho, WWAMI Medical Education Program. The University of Idaho, WWAMI Medical Education Program is jointly accredited by the Accreditation Council for Continuing Medical Education (ACCME), the Accreditation Council for Pharmacy Education (ACPE), and the American Nurses Credentialing Center (ANCC) to provide continuing education for the healthcare team.

Financial Relationship Disclosure to Learners

No one involved in planning or presenting this activity has any relevant financial relationships to disclose.

Disclosure

I do not have a current financial relationship with any entities that may have a direct commercial interest in the subject matter of this CME program.

Most of the information discussed here comes from the AAP's first clinical practice guideline (CPG) outlining evidence-based evaluation and treatment of children and adolescents with overweight and obesity (ages 2 to18) .

Most recommendations are evidenced based, though some are expert opinions only.

This guideline does not cover the prevention of obesity.

FROM THE AMERICAN ACADEMY OF PEDIATRICS | CLINICAL PRACTICE GUIDELINE | JANUARY 09 2023

Clinical Practice Guideline for the Evaluation and Treatment of Children and Adolescents With Obesity FREE

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https://doi.org/10.1542/peds.2022-060640 **Article history**

Objectives

Review definitions and statistical/clinical importance of childhood obesity.

Review current evidence and recommendations regarding evaluation of and interventions for childhood obesity.

Review evidence for screening for comorbidities in children and adolescents with obesity.

Definitions

Overweight and obesity: Overweight is defined as a BMI at or above the 85th percentile and below the 95th percentile for children and teens of the same age and sex. Obesity is defined as a BMI at or above the 95th percentile for children and teens of the same age and sex.

Severe obesity: Severe obesity is defined as BMI ≥ 120% of the 95th percentile for age and sex. The expanded definition of "severe obesity" includes Class 2 and Class 3 obesity.

- Class 2 obesity (≥120% to <140% of the 95th percentile) or a BMI ≥ 35 kg/m^2 to <40 kg/m^2, whichever is lower based on age and sex
- Class 3 obesity (≥140% of the 95th percentile) or BMI ≥ 40 kg/m^2, whichever is lower based on age and sex

Definitions

Person-first language: According to the CDC, person-first language emphasizes the individual, not their disabilities. Hence, the referenced guidelines describe “children with obesity” or “adolescents with overweight,” not “obese children” and/or “overweight adolescents.”

History

Obesity has long been stigmatized as a reversible consequence of personal choices.

Derisive adjectives such as "lazy", "lacking self-control", and worse have been used to describe people with obesity (including children). Much focus has been placed on the individual's lifestyle. However, while lifestyle definitely plays a significant role in the development of obesity, ongoing research continues to show that obesity has complex genetic, physiologic, socioeconomic, and environmental contributors.

Social determinants of health play a large role in obesity. Children exposed to racism, poverty, ACEs, or other forms of stigma or discrimination are more likely to experience obesity than children without these exposures.

Prevalence

The percentage of US children and adolescents affected by obesity has more than tripled from 5% in 1963 to 1965 to 19% in 2017 to 2018. (Rise has slowed somewhat recently.)

A predictive epidemiologic model estimates that if 2017 obesity trends hold, 57% of children aged 2 to 19 years will have obesity by the time they are 35 years of age, in 2050.

Prevalence

How does this compare to other countries?

"The highest number of [children with obesity] lives in China (>28 million), followed by the United States of America (>13 million), India (>7.5 million), Brazil (>5.2 million) and Mexico (>5.1 million). Egypt, Indonesia, Turkey, Pakistan and Iraq complete the top 10 countries. China's prevalence is with 11.7% rather average, the high absolute number is a result of the big population.

The highest prevalence among children is recorded on the Pacific island states of Nauru and Palau (both >30%), Tonga, Kiribati and the Marshall Islands (all above 23%). Kuwait, Samoa, the United States and Micronesia all have an obesity prevalence of more than 20%."

History

So, what has changed?

While we should not focus solely on lifestyle as the source of obesity, there is no denying that a change in lifestyle has contributed to the uptick in obesity on a population scale.

Three main components of children's lifestyles directly relate to obesity: technology, nutrition, and physical activity.

- Over the same timespan that childhood obesity has increased, technology use has increased while physical activity rates have dropped. Additionally, preferred sources of nutrition have shifted from home-cooked meals to highly processed, fast-foods.

Impact

Children with obesity commonly become adolescents and adults with obesity; severe obesity during adolescence increases the risk for severe obesity during young adulthood.

Obesity puts children and adolescents at risk for serious short- and long-term adverse health outcomes later in life, including cardiovascular disease, including HTN; dyslipidemia; insulin resistance; T2DM; and nonalcoholic fatty liver disease (NAFLD).

Obesity in childhood and adolescence is **also associated with poor psychological and emotional health**, increased stress, depressive symptoms, and low self-esteem.

Impact

...and all of these things can in turn worsen obesity, especially in a child.

It becomes a vicious cycle.

General Recommendation

Because obesity is a chronic disease with escalating effects over time, **a life course approach** to identification and treatment should **begin as early as possible** and **continue longitudinally** through childhood, adolescence, and young adulthood, with transition into adult care.

Screening for Comorbidities

>10 years old, children with obesity - evaluation for liver dysfunction plus lipid and glucose abnormalities.

2-9 years, children with obesity OR >10 children with overweight – consider evaluation for lipid abnormalities (not universal screening for liver or glucose abnormalities – need other risk factors such as family history or physical exam findings)

That being said…

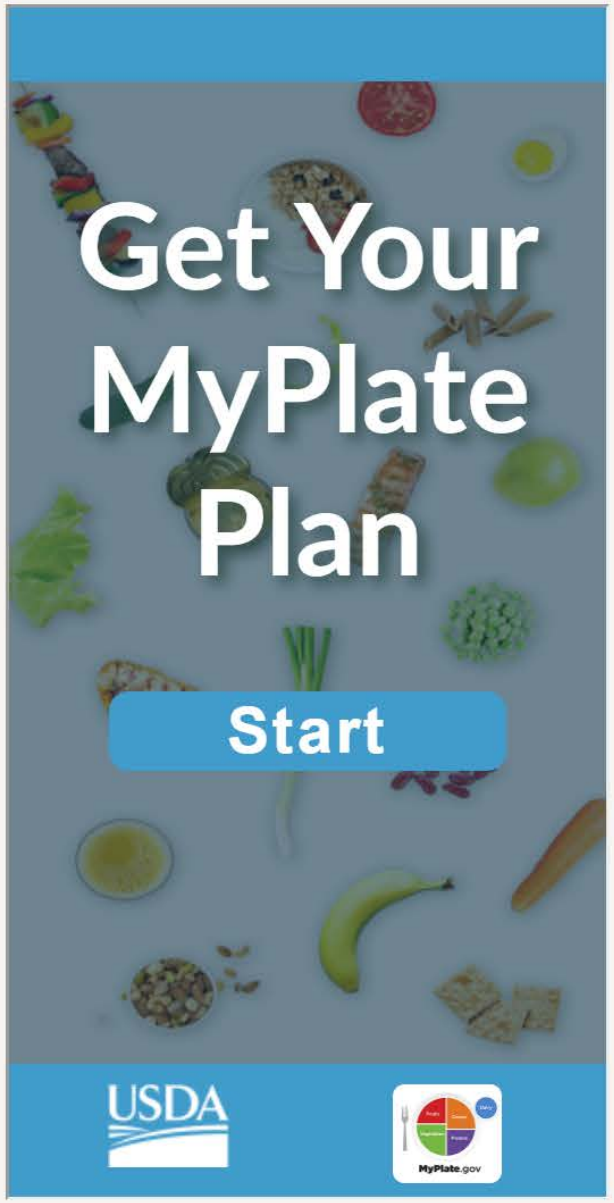
For hyperlipidemia and nonalcoholic fatty liver disease, first-line treatment is behavior interventions already recommended for those with obesity, raising the question of what is gained by laboratory screening and making these additional diagnoses.

Treatment

Obesity is a chronic disease and should be treated with intensive and long-term care strategies:

- Motivational Interviewing (patient to choose how to change)
- Intensive Health Behavior and Lifestyle Treatment (IHBLT) **not widely available (WA, CA, or CO)*
  - Involves frequent visits and follow-up. (a minimum of 26 hours of face-to-face, family-based, multicomponent treatment over at least three to 12 months)
  - Few online/virtual programs.
  - St. Luke's Children's Integrative Medicine may have closest program to an IHBLT in the area.
- Recommend different diet and exercise strategies

Strategy	Description	References
Reduction of sugar-sweetened beverages (SSBs)	Higher intake of sugar-sweetened beverages (carbonated beverages, sweetened beverages, soda, sports drinks, and fruit drinks) is associated with greater wt gain in adults and children. The American Heart Association (AHA) recommends not more than 25 g (6 tsp) each day of added sugar and not more than 1, 8-oz serving of SSB per week. The AAP discourages the consumption of sports drinks and energy drinks for children and adolescents. The AAP statement on fruit juice notes that it is a poor substitute for whole fruit because of its high sugar and calorie content and pediatricians should advocate for elimination of fruit juice in children with excessive wt gain.	Systematic review[659]; AHA SSB[660]; AAP sports and energy drinks[661]; AAP fruit juice[662]
Choose My Plate	MyPlate is the US Department of Agriculture's (USDA) broad set of recommendations for healthy eating for Americans. These recommendations include multiple healthy diet goals: low in added sugar, low in concentrated fat, nutrient dense but not calorie dense, within an appropriate calorie range without defined calorie restriction, and with balanced protein and carbohydrate. The principles can be adapted to different food cultures. There is a surprising dearth of literature on the impact of these guidelines on health and BMI outcomes and on the most effective education practices.	USDA choosemyplate.gov
60 min daily of moderate to vigorous physical activity	Aerobic exercise, especially for 60 min at a time, is associated with improved body weight in youth although its effect may be small and variable. It is also associated with better glucose metabolism profiles. High-intensity interval training in youth with obesity may improve body fat, weight, and cardiometabolic risk factors, although the effect is variable.[663] The Physical Activity Guidelines for Americans recommends 60 min per day for children and adolescents.	Systematic reviews[664-667]; AAP physical activity; Guidelines for Americans[379,635]
Reduction in sedentary behavior	Reduction in sedentary behavior, generally defined as reduced screen time, has consistently shown improvement in BMI measures, although impact is small. Early studies focused on reduced television, a discrete activity that is simpler than current multifunctional electronic devices. The AAP recommends no media use under age 18 mo, a 1-h limit for ages 2–5 y, and a parent-monitored plan for media use in older children, with a goal of appropriate, not-excessive use but without a defined upper limit.	AAP media and young minds[170]; systematic review[656]



MyPlate Plan

The MyPlate Plan* shows your food group targets – what and how much to eat within your calorie allowance.

Your food plan is personalized, based on your:

- Age
- Sex
- Height
- Weight
- Physical activity level

To get started, click on the "Start" button. You can also find out your MyPlate Plan in Spanish.

Get the MyPlate Plan widget to post or share on your blog or website!

Get the Widget

Your MyPlate Plan: 2400 Calories, Age 14+ Years

Below are the daily recommended amounts for each food group.

Click on the food group buttons to learn more and get started.

Download your MyPlate Plan.

Talk with your health care provider about an eating pattern and physical activity program that is right for you.

2 cups

1 cup from the Fruit Group counts as:

- 1 cup raw, frozen, or cooked/canned fruit; or
- ½ cup dried fruit; or
- 1 cup 100% fruit juice

Read more

6½ ounces

1 ounce from the Protein Foods Group counts as:

- 1 ounce seafood, lean meat, or poultry; or
- 1 egg; or
- 1 Tbsp peanut butter; or
- ¼ cup cooked beans, peas, or lentils; or
- ½ ounce unsalted nuts or seeds

Read more

3 cups

1 cup from the Vegetable Group counts as:

- 1 cup raw or cooked/canned vegetables; or
- 2 cups leafy salad greens; or
- 1 cup 100% vegetable juice

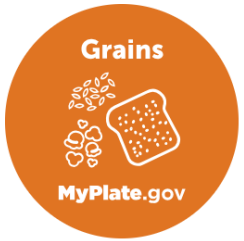
Read more

3 cups

1 cup from the Dairy Group counts as:

- 1 cup dairy milk or yogurt; or
- 1 cup lactose-free dairy milk or yogurt; or
- 1 cup fortified soy milk or yogurt; or
- 1½ ounces hard cheese

Read more



8 ounces

1 ounce from the Grains Group counts as:

- 1 slice bread; or
- 1 ounce ready-to-eat cereal; or
- ½ cup cooked rice, pasta, or cereal

Read more

Treatment

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- Motivational Interviewing (patient to choose how to change)
- Intensive Health Behavior and Lifestyle Treatment (IHBLT) **not widely available (WA, CA, or CO)*
  - Involves frequent visits and follow-up. (a minimum of 26 hours of face-to-face, family-based, multicomponent treatment over at least three to 12 months)
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Treatment

Strategy	Description	References
Avoidance of breakfast skipping	Breakfast skipping among children is associated with overweight and obesity and with lower quality of dietary intake throughout the day.	Systematic review[668]
Traffic Light Diet	This approach to teaching healthy eating has shown consistent success within the context of moderate- to high-intensive multicomponent programs, in which experienced providers help families learn and use the diet.	Evidence summary can be found on the Academy of Nutrition and Dietetics Web site: https://www.andeal.org/topic.cfm?cat=1429&evidence_summary_id=250033&highlight=traffice%20light%20diet&home=1.
5 2 1 0	This messaging emerged from a consortium of primary care pediatricians as simple, memorable, and feasible (www.mainehealth.org/Lets-Go/Childrens-Program). Each component of 5-2-1-0 messaging aligns with a major recommendation or guideline: 5 fruits and vegetables a day is consistent with the USDA ChooseMyPlate recommendations, 2 h or less of screen time is consistent with earlier versions of AAP policy; 1 h or more of moderate to vigorous physical activity is consistent with Physical Activity Recommendations for Americans, and 0 (or nearly no) sugar-sweetened beverages aligns with USDA, AHA, and AAP.	Scant literature on weight or BMI impact.[669,670] Attainment of 5-2-1-0 behaviors is low.[671]
Use of screen-based physical activity (exergames)	Video games that require physical activity can reduce children's body wt. Players can reach levels of light-to-moderate intensity physical activity during exergame play, especially games that involve whole-body movement. Systematic reviews have shown that children can lose body weight or attenuate weight gain when playing exergames over a sustained period of time. Specific setting in which exergaming resulted in weight, adiposity, or BMI z-score improvement included home, part of a structured physical activity program, and part of a multicomponent obesity treatment. Children experienced modest reductions in weight, adiposity, or BMI z-score when exergames were provided in the home, within a structured physical activity program, and within an obesity treatment program. There is less evidence to date for newer technologies like smartphone apps and wearables, but these are promising tools to engage and sustain youths' interest in healthy behaviors.	645,672-683
Appropriate amount of sleep for age	Obesity is associated with shorter sleep duration, and the association appears to be driven by increased calorie consumption, decreased physical activity from fatigue, and potential hormonal and metabolic alterations such as increased ghrelin and decreased leptin leading to hunger.	Systematic review[243–247]

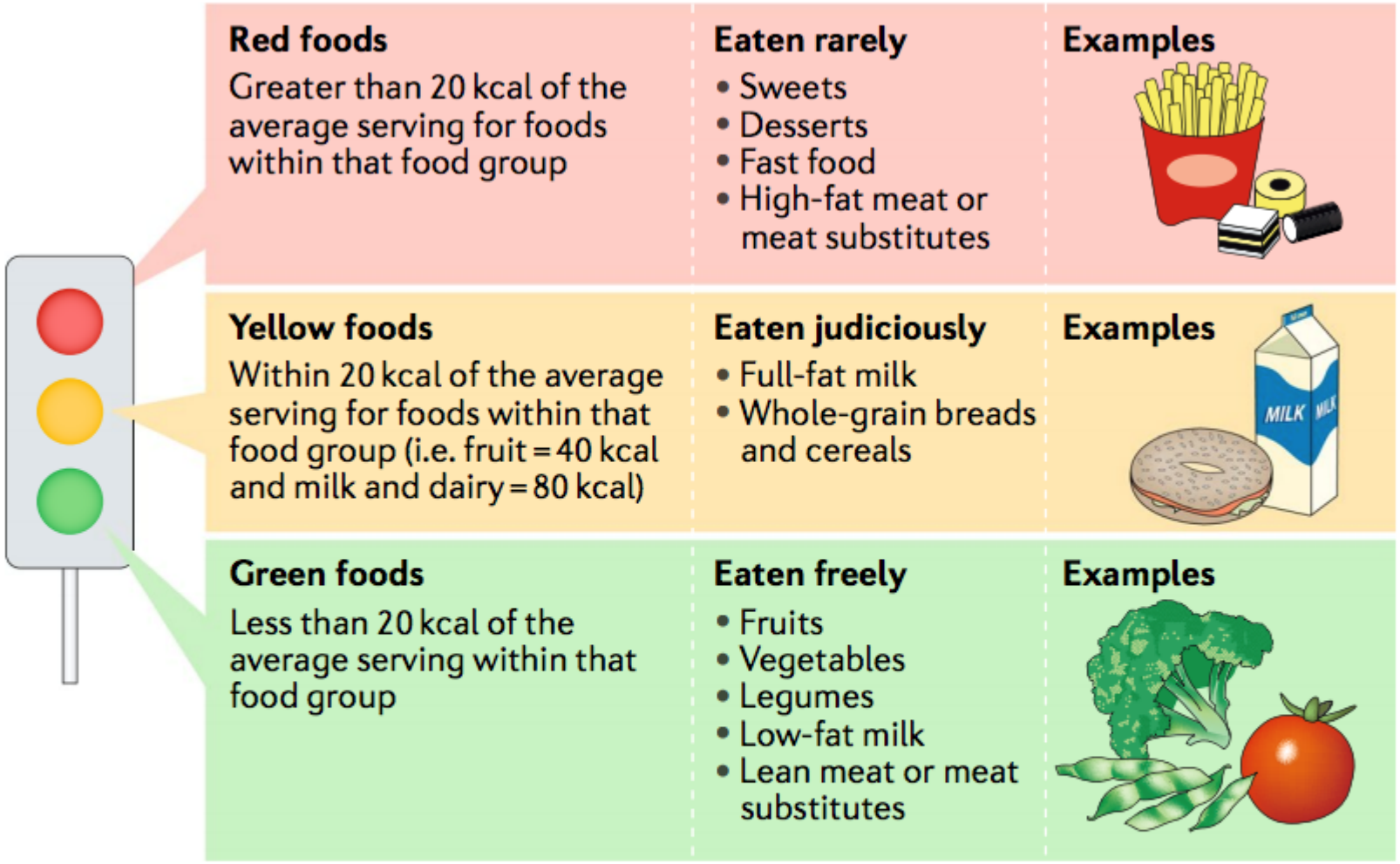

Fig. 2 | **Traffic light diet categories**[18,36,37,113]**.** Foods are categorized according to high (top panel), moderate (middle panel) or low (bottom panel) caloric density. These categories are used to guide frequency of intake, with the aim to reduce overall calorie intake.

Treatment

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9
HOURS OF SLEEP
5
SERVINGS OF FRUITS AND VEGETABLES
2
HOURS OR LESS OF RECREATIONAL SCREEN TIME
1
HOUR OF PHYSICAL ACTIVITY
0
SUGARY BEVERAGES

Treatment

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Treatment

Pharmacotherapy**

- No longer “taboo” or something to only be considered by specialists.
- Shouldn’t be “monotherapy”, but used in conjunction with behavior and lifestyle changes.
- Recommended to consider for children >12 with obesity.
- Also recommended for children 12 and under if there are other indications besides obesity.

Treatment

Pharmacotherapy

- Some potential options:
  - Metformin
  - Orlistat
  - GLP-1
  - Phentermine + topiramate (or separate)

- No specific recommendations on when to refer, but if not comfortable prescribing these medications to pediatric patients, can refer to obesity specialists (who may also be able to provide IHBLT).

Treatment

Bariatric surgery

- PCPs should offer referral for adolescents 13 y and older with severe obesity (BMI ≥ 120% of the 95th percentile for age and sex) for evaluation for metabolic and bariatric surgery to local or regional comprehensive multidisciplinary pediatric metabolic and bariatric surgery centers.
- A referral to a comprehensive metabolic and bariatric surgery center with experience and expertise in treatment of patients younger than 18 years does not necessarily mean the child will ultimately have surgery.

How is this different?

Past recommendations were mainly focused on diet and exercise…

Now:

- View obesity as a chronic disease—similar to asthma and diabetes.
- Focus on integrating weight management components and strategies across appropriate disciplines, which can include **intensive health behavior and lifestyle treatment**, with **pharmacotherapy** and **metabolic and bariatric surgery** if indicated.

But what about the long-term effects??

Pharmacotherapy

* For GLP-1 therapy:

Notable findings from multiple studies show significant weight loss benefits in pediatric and adolescent patients, just as they have shown in adults.

Side effects:

- Similar to adults, short term GI side effects were the most prominent findings.
- Potential for cholelithiasis is increased with use of GLP-1 agents in pediatric patients.
- Infrequent reports of mild hypoglycemic episodes also reported.

But what about the long-term effects??

Bariatric surgery

* A study out of Sweden looked at Roux-en-Y gastric bypass in adolescents with severe obesity

Notable findings included:

- Adolescents with severe obesity undergoing RYGB experienced substantial weight loss over 5 years, alongside improvements in comorbidities, risk factors and quality of life.

Side effects:

- Concerning prevalence of iron deficiency, associated low hemoglobin levels, and also vitamin D insufficiency. Suspected due to poor compliance with supplementation.
- Increased rates of repeat surgical intervention for abdominal herniation and cholecystectomy (due to gallstones, likely due to rapid weight loss)

But what about the long-term effects??

1) Does the use of GLP-1RAs for pediatric obesity treatment exacerbate existing health disparities?

- A recent study suggested that while expanding obesity medication use among adolescents could lower overall obesity rates, it could also intensify current racial and ethnic disparities by leaving a higher proportion of youth from racial/ethnic minority groups still affected by obesity, without access to effective treatment.

2) Are youth at risk of being stigmatized for using GLP-1RAs to lose weight?

- Rapid weight loss from GLP-1RAs may draw peers' attention to youth using it. This attention could be either positive (i.e., encouragement and praise) or negative (i.e., teasing), but both can have a negative impact on their psychosocial health.6,7 A recent study showed that adults are prone to judge others for using GLP-1s, viewing them as an easy shortcut for weight loss.

3) Does discontinuing GLP-1RAs have psychosocial consequences for youth?

- Recent evidence suggests weight regain following cessation of GLP-1s in adolescents; could the temporary weight loss resulting from these medications unintentionally promote unhealthy weight control behaviors and weight cycling?

But what about the long-term effects??

The bottom line:

We have an idea, but we don't have much direct data– especially in the very long-term

…but we do know the effects of obesity.

Back to the General Recommendation

Because obesity is a chronic disease with escalating effects over time, **a life course approach** to identification and treatment should **begin as early as possible** and **continue longitudinally** through childhood, adolescence, and young adulthood, with transition into adult care.

In a sense, if you would consider it for management of weight in an adult, maybe you should start to consider it in children as well!

The practical side

Will any of this get covered?

How will this change your practice?

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Thank you

Questions?