Progress in Pediatric Care:
A New Map for Treating Childhood Obesity

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Disclosures

- Dr. Kelly engages in unpaid consulting and educational activities for Novo Nordisk, Vivus, Eli Lilly, and Boehringer Ingelheim
- Receives donated drug/placebo from Vivus and Novo Nordisk for National Institute of Diabetes and Digestive and Kidney Diseases-funded clinical trials

Presentation Highlights

What obesity is and is not

Treatment goals and limitations of lifestyle therapy as a singular approach

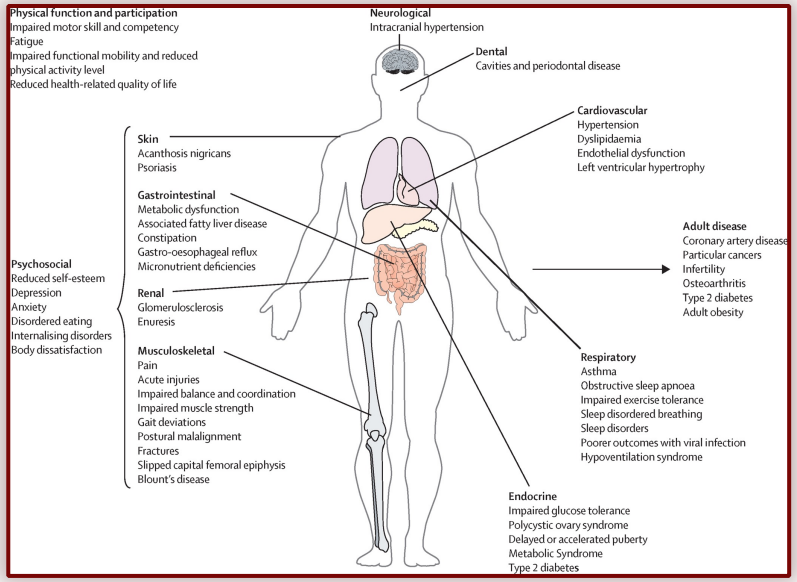
New guideline from the American Academy of Pediatrics

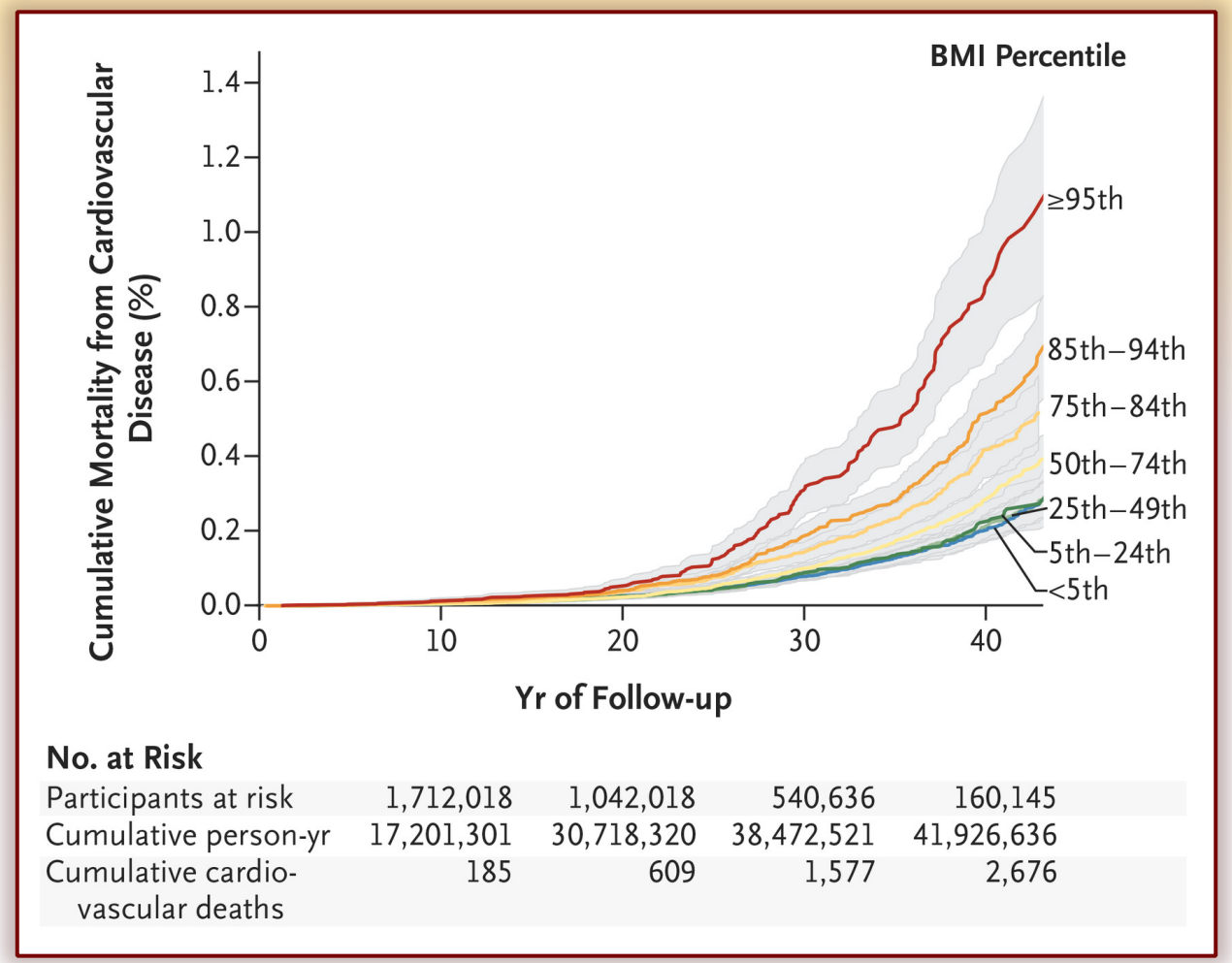
New treatments hot off the press

Deciding about potential treatments: what, when, and how

What Obesity Is

- A chronic, refractory, and relapsing **disease** (even in childhood)
- Excess adiposity that impairs health
- Clinically defined by BMI at or above the 95th percentile





No. at Risk

Participants at risk	1,712,018	1,042,018	540,636	160,145
Cumulative person-yr	17,201,301	30,718,320	38,472,521	41,926,636
Cumulative cardio-vascular deaths	185	609	1,577	2,676

Illustration from: Jebeile H, Kelly AS, O'Malley G, Baur LA. Obesity in children and adolescents: epidemiology, causes, assessment, and management. *Lancet Diabetes Endocrinol*. 2022 May;10(5):351-365. doi: 10.1016/S2213-8587(22)00047-X. Epub 2022 Mar 3. PMID: 35248172. Chart image from: Twig G, Yaniv G, Levine H, Leiba A, Goldberger N, Derazne E, Ben-Ami Shor D, Tzur D, Afek A, Shamiss A, Haklai Z, Kark JD. Body-Mass Index in 2.3 Million Adolescents and Cardiovascular Death in Adulthood. *N Engl J Med*. 2016 Jun 23;374(25):2430-40. doi: 10.1056/NEJMoa1503840. Epub 2016 Apr 13. PMID: 27074389.

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What Obesity Is

Caused by countless factors (many/most of which are not within the control of the individual) that collectively facilitate weight gain over time

Doggedly persistent, particular when surfacing early in life:

- If obesity surfaces in childhood, it is probably a particularly aggressive form of the disease
- >85% of youth with obesity will grow up to be adults with obesity

Freedman et al. *J Pediatr* 2007.

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What Obesity Is Not

- ⊗ A lifestyle problem
- ⊗ A choice
- ⊗ A lack of willpower
- ⊗ Laziness
- ⊗ Bad parenting

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What Should Our Treatment Goals Be?

Durably reduce excess adiposity

- If we successfully treat childhood obesity, we successfully treat life-course obesity

BMI reduction >8-10%??

- Jury is still out on what represents clinically meaningful BMI reduction
- May vary patient-to-patient, based on many factors

Weight/BMI stabilization may be laudable goal for some patients

Lifestyle Modification Therapy

US Preventive Services Task Force

Clinical Review & Education

JAMA | US Preventive Services Task Force | RECOMMENDATION STATEMENT

Screening for Obesity in Children and Adolescents
US Preventive Services Task Force
Recommendation Statement

US Preventive Services Task Force

IMPORTANCE Based on year 2000 Centers for Disease Control and Prevention growth charts, approximately 17% of children and adolescents aged 2 to 19 years in the United States have obesity, and almost 32% of children and adolescents are overweight or have obesity. Obesity in children and adolescents is associated with morbidity such as mental health and psychological issues, asthma, obstructive sleep apnea, orthopedic problems, and adverse cardiovascular and metabolic outcomes (eg, high blood pressure, abnormal lipid levels, and insulin resistance). Children and adolescents may also experience teasing and bullying behaviors based on their weight. Obesity in childhood and adolescence may continue into adulthood and lead to adverse cardiovascular outcomes or other obesity-related morbidity, such as type 2 diabetes.

SUBPOPULATION CONSIDERATIONS Although the overall rate of child and adolescent obesity has stabilized over the last decade after increasing steadily for 3 decades, obesity rates continue to increase in certain populations, such as African American girls and Hispanic boys. These racial/ethnic differences in obesity prevalence are likely a result of both genetic and nongenetic factors (eg, socioeconomic status, intake of sugar-sweetened beverages and fast food, and having a television in the bedroom).

OBJECTIVE To update the 2010 US Preventive Services Task Force (USPSTF) recommendation on screening for obesity in children 6 years and older.

EVIDENCE REVIEW The USPSTF reviewed the evidence on screening for obesity in children and adolescents and the benefits and harms of weight management interventions.

FINDINGS Comprehensive, intensive behavioral interventions (≥26 contact hours) in children and adolescents 6 years and older who have obesity can result in improvements in weight status for up to 12 months; there is inadequate evidence regarding the effectiveness of less intensive interventions. The harms of behavioral interventions can be bounded as small to none, and the harms of screening are minimal. Therefore, the USPSTF concluded with moderate certainty that screening for obesity in children and adolescents 6 years and older is of moderate net benefit.

CONCLUSIONS AND RECOMMENDATION The USPSTF recommends that clinicians screen for obesity in children and adolescents 6 years and older and offer or refer them to comprehensive, intensive behavioral interventions to promote improvements in weight status. (B recommendation)

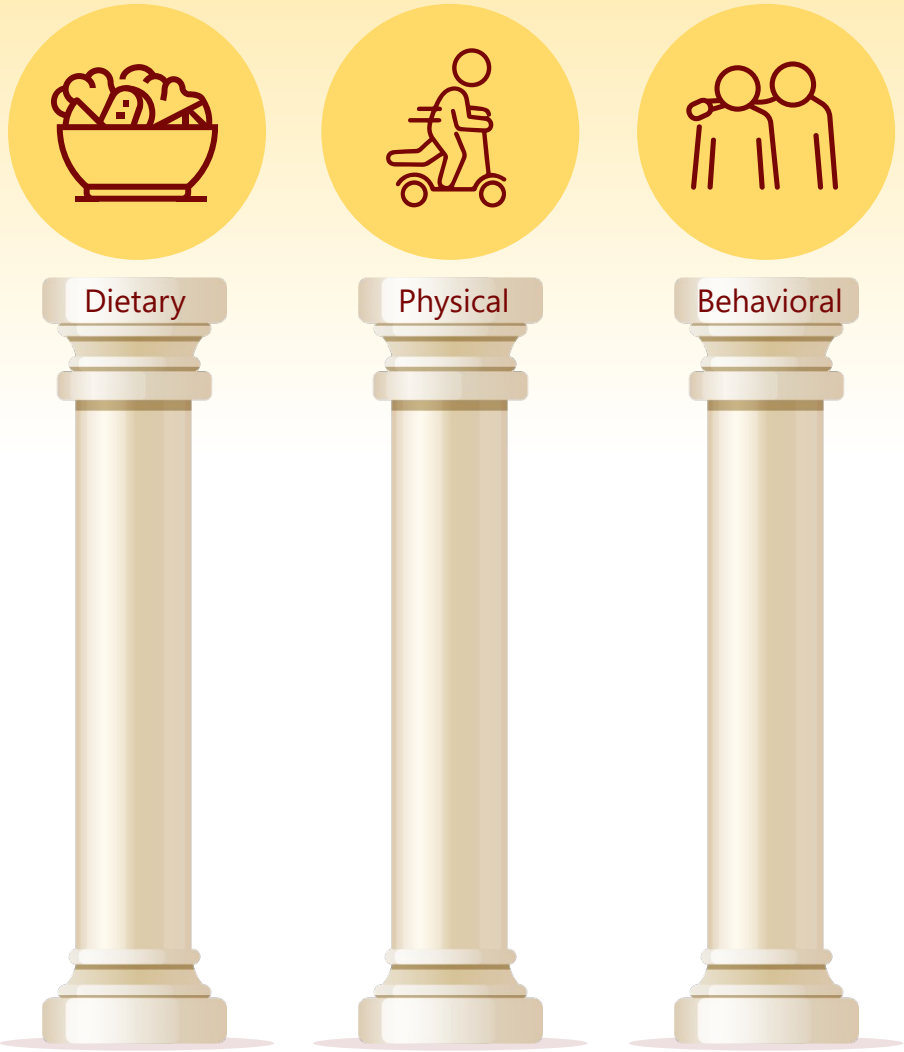
Editorial page 2378
Author Audio Interview
Related article page 2427 and JAMA Patient Page page 2460
CME Quiz at jamanetwork.com/learning
Related articles at jamapediatrics.com jamainternalmedicine.com

Author/Group Information: The US Preventive Services Task Force (USPSTF) members are listed at the end of this article.
Corresponding Author: David C. Grossman, MD, MPH (chair@uspstf.net).

JAMA. 2017;317(23):2417-2426. doi:10.1001/jama.2017.6803

"The USPSTF recommends that clinicians screen for obesity in children and adolescents 6 years and older and offer or refer them to comprehensive, intensive behavioral interventions to promote improvements in weight status."

"The USPSTF found that comprehensive, intensive behavioral interventions with a total of 26 contact hours or more over a period of 2 to 12 months resulted in weight loss. Behavioral interventions with a total of ***52 contact hours or more*** *demonstrated greater weight loss and some improvements in cardiovascular and metabolic risk factors."*



O'Connor et al. *JAMA* 2017.

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Lifestyle Modification Therapy

US Preventive Services Task Force

Table 2. Summary of Change in BMI *z* Score in 28 Trials for Treatment of Obesity in Children and Adolescents[a]

Intervention Intensity, h[b]	No. of Trials	No. of Participants	Mean Change in BMI *z* Score		Difference in Change in BMI *z* Score From Baseline (95% CI)	Mean Change in Weight, lb[c]	
			Intervention	Control		Intervention	Control
≥52	5	875	−0.05 to −0.34	0.00 to 0.26	−0.31 (−0.16 to −0.46)	−7 to 3	8 to 17
26-51	7	489	−0.11 to −0.59	−0.20 to 0.40	−0.17 (−0.30 to −0.04)	Preschool: 1 to 5 Elementary: −6 to 15 Adolescent: 5	Preschool: 11 to 12 Elementary: 3 to 20 Adolescent: 7
6-25	7	513	0.05 to −0.24	0.09 to −0.13	0.01 (−0.06 to 0.08)	Elementary: 6 to 10 Adolescent: −3 to 7	Elementary: 6 to 10 Adolescent: −2 to 18
1-5	9	1315	0 to −0.20	0.10 to −0.10	−0.09 (−0.14 to −0.05)	Preschool: 1 to 4 Elementary: 1 to 12 Adolescent: 4	Preschool: 1 to 4 Elementary: 2 to 18 Adolescent: 6 to 12

Abbreviation: BMI, body mass index.

[a] Data presented in this table are limited to trials that reported BMI *z* score.

[b] Estimated.

[c] Age-specific results were available from trials that limited enrollment to only 1 of the 3 age categories (preschool, elementary, or adolescent). Trials with 52 or more hours of contact enrolled participants across the 3 age categories and both sexes, so age- and sex-specific results were not available.

O'Connor et al. *JAMA* 2017.

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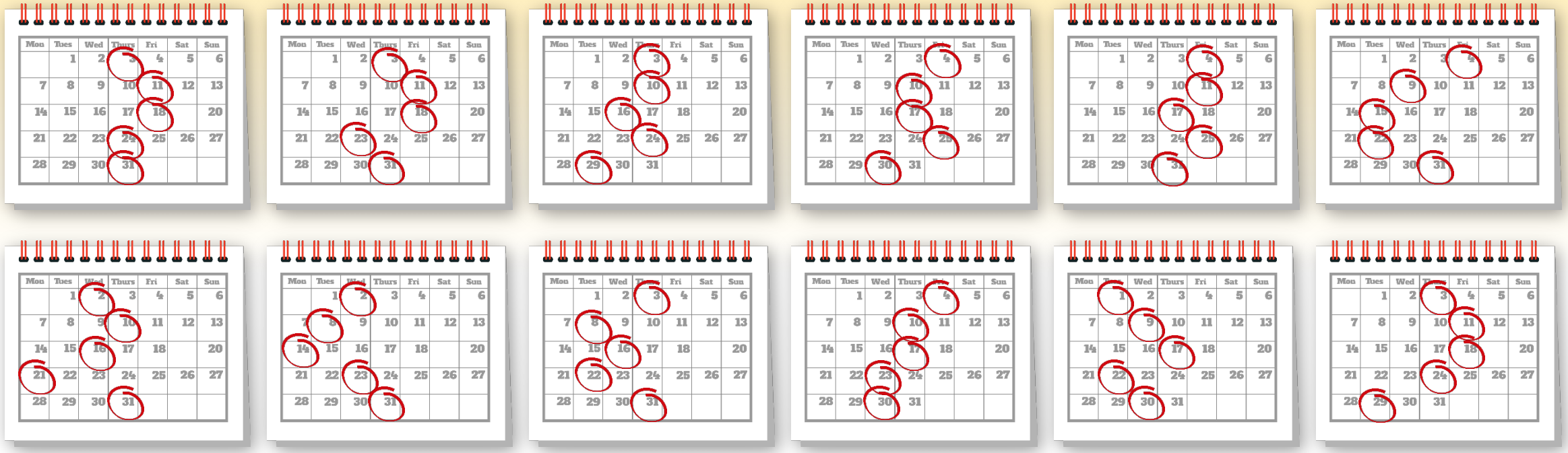
Is The USPSTF Recommendation Practical?



Fewer than 50%

of pediatric patients referred for weight management services enroll in treatment

Attrition rates >50%

have been reported in behavioral-based clinical trials and in the clinical setting

Danielsson et al. *JAMA Pediatr* 2012; Kumar et al. J Pediatr 2019; Savoye et al. *JAMA* 2007; Shaffer et al. *J Pediatr* 2016; Skelton et al. *Obes Rev* 2011; Smith et al. *Nutrients* 2015.

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

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Greetings

You have in your hands, or at your fingertips, the first edition of the American Academy of Pediatrics clinical practice guideline for evaluation and management of children and adolescents with overweight and obesity. Putting together this guideline was no small task, and the Academy is grateful to the efforts of all the professionals who contributed to the production of this document. This work is a true testament to their passion and dedication to combatting childhood and adolescent overweight and obesity.

The Subcommittee responsible for developing this guideline comprises a diverse group of professionals from a variety of disciplines representing both governmental entities and private institutions. Experts all, they are united by a common desire to provide the finest, most effective care and treatment to children and adolescents with overweight and obesity. Over the course of several months, the members of the Subcommittee reviewed the technical reports produced from the study review, then worked in concert to develop the Key Action Statements and Expert Consensus Recommendations contained within this guideline. These were crafted with meticulous care by the Subcommittee members, to align with current literature and to place appropriate emphasis on each statement.

While representing such a broad spectrum of perspectives, the members of this committee are all keenly aware of the multitude of barriers to treatment that patients and their families face. These barriers impact not only their access to treatment, but their ability to follow prescribed treatment plans. Whereas some patients are able to adopt the lifestyle changes and habitualize elements of their prescribed treatment plans, so many others struggle to do so for a wide variety of reasons. The members of the Subcommittee understand all of this. To assist with optimizing health equity and overcoming these barriers, guidance on a number of multilevel factors related to barriers to treatment have been included in this guideline. During the course of their work, members of the Subcommittee acknowledged that, although so much has been learned to advance the treatment of children and adolescents with overweight and obesity, there is still so much we have yet

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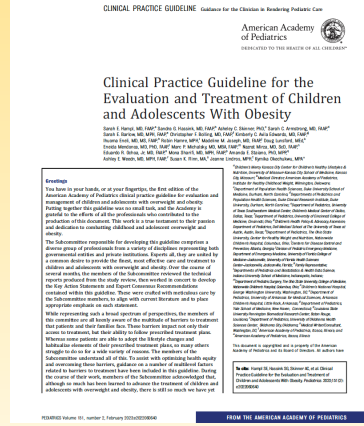
To cite: Hampl SE, Hassink SG, Skinner AC, et al. Clinical Practice Guideline for the Evaluation and Treatment of Children and Adolescents With Obesity. *Pediatrics*. 2023;151(2):e2022060640

American Academy of Pediatrics Guideline


CLINICAL PRACTICE GUIDELINE Guidance for the Clinician in Rendering Pediatric Care

American Academy of Pediatrics

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

American Academy of Pediatrics

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TREATMENT

P&PHCPs *should* treat overweight/obesity & comorbidities concurrently (KAS 4) following the principles of the **medical home** and the **chronic care model,** using a **family-centered** and **non-stigmatizing** approach that acknowledges obesity's **biologic, social, and structural drivers.**(KAS 9)

Components of Comprehensive Treatment	Overweight			Obesity		
	<6y	6 to <12y	≥12y	<6y	6 to <12y	≥12y
Motivational Interviewing[f] (KAS 10)	✓	✓	✓	✓	✓	✓
Intensive Health Behavior and Lifestyle Treatment[g] (KAS 11)	⚖	✓	✓	⚖	✓	✓
Weight Loss Pharmacotherapy[h] (KAS 12)						✓
Offer referral to Comprehensive Pediatric Metabolic & Bariatric Surgery programs[i] (KAS 13)						✓[i]

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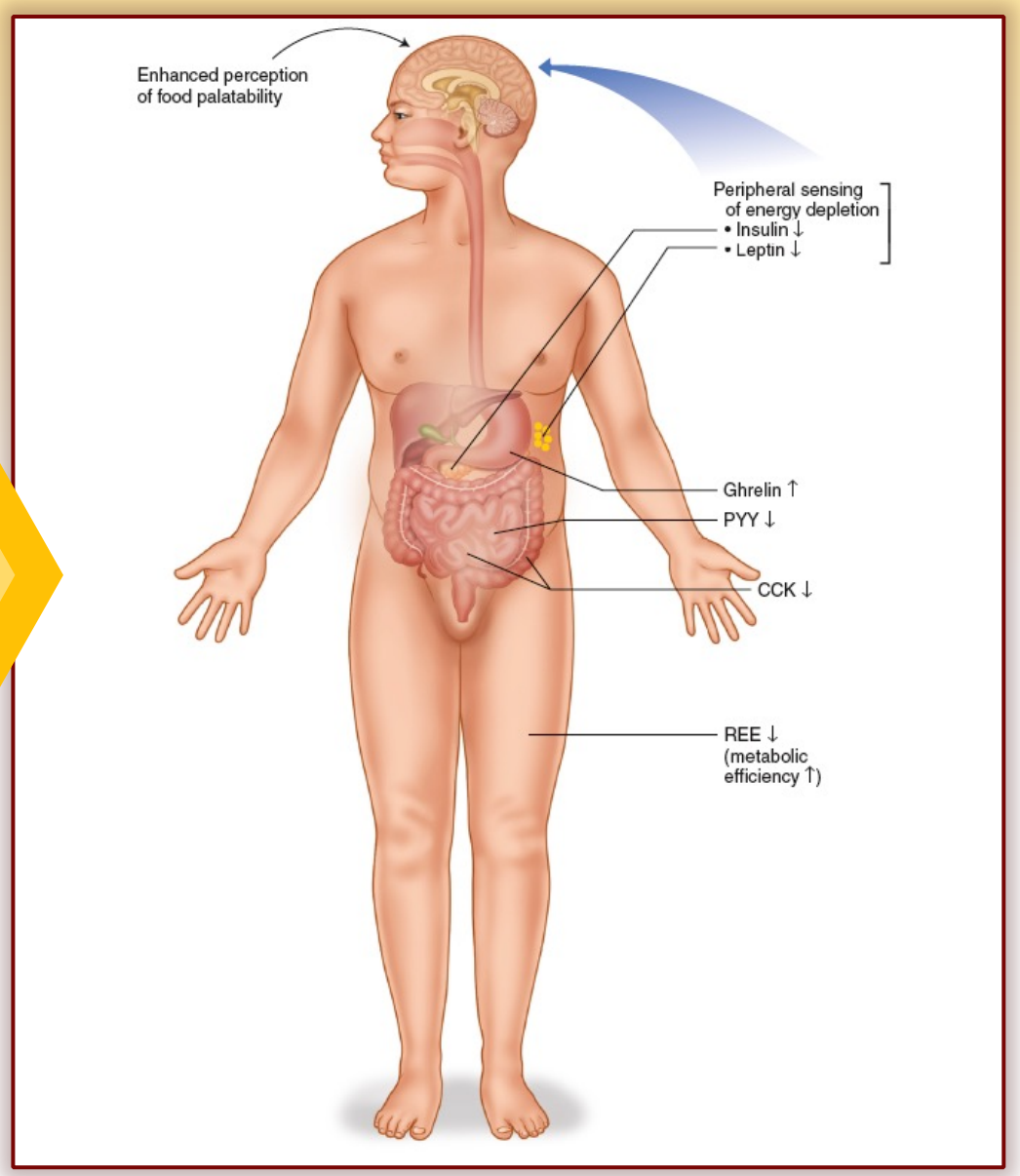
Biological Response To Weight Loss



Kelly and Fox, from "*Pediatric Obesity: Etiology, Pathogenesis, and Treatment*" 2016.

Biological Response To Weight Loss

Factors Unique To The Developing Child/Teen

- Height velocity and energy expenditure
- Role of reproductive priming and defended fat mass
- Self-selected reduced physical activity
- Immature executive functions
- Heightened reward responsivity

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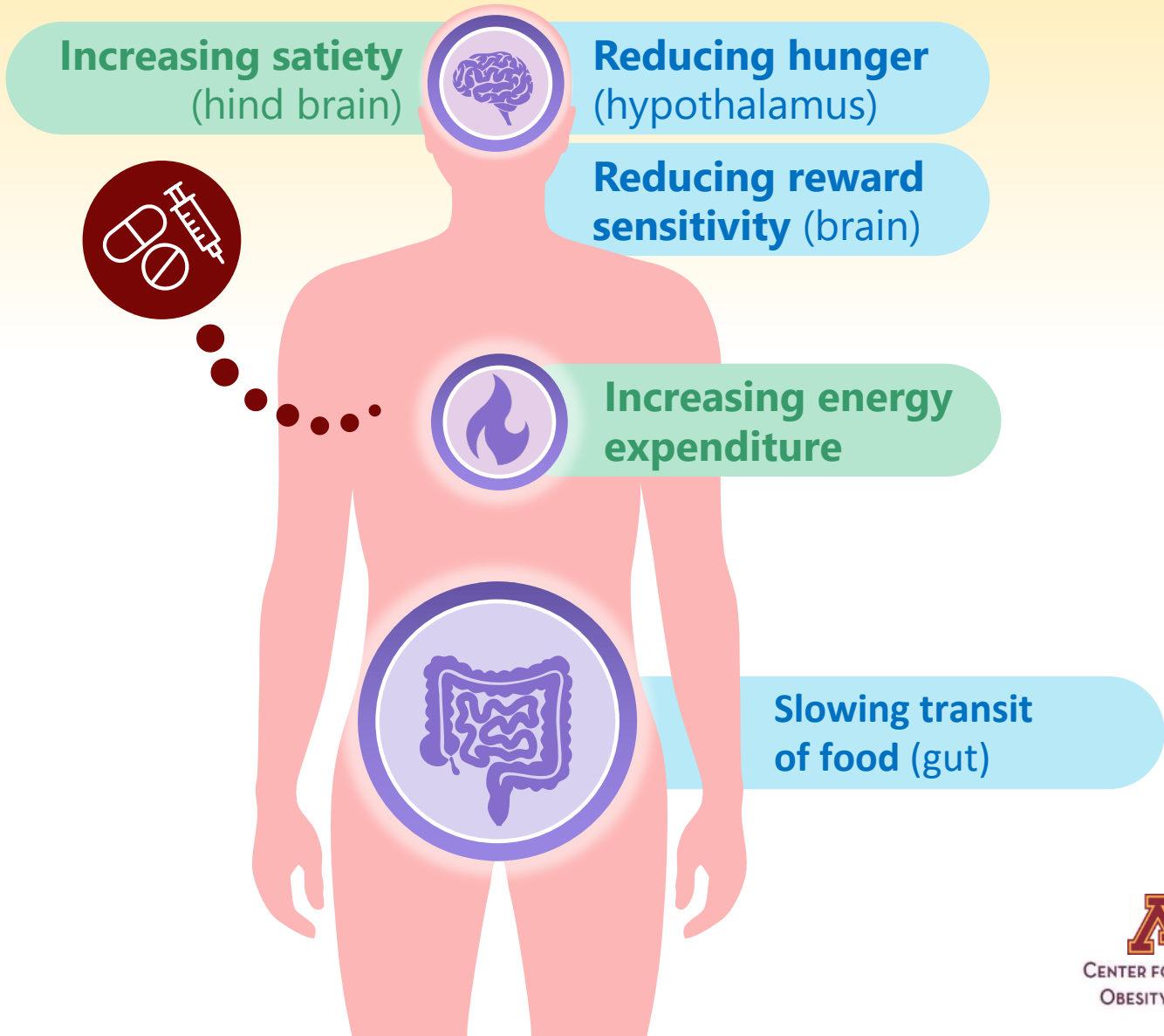
Anti-Obesity Medications

- Target underlying biological pathways regulating energy balance



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Approved Anti-Obesity Medications For Pediatric Obesity

- **Phentermine** approved for ≥16 years
- **Orlistat** approved for ≥12 years
- **Liraglutide 3 mg** approved for ≥12 years
- **Phentermine/topiramate** approved for ≥12 years
- **Semaglutide 2.4 mg** approved for ≥12 years

- **Liraglutide 3 mg** approved for ≥12 years

1. Suprenza (phentermine) Prescribing Information. Available at: https://www.accessdata.fda.gov/drugsatfda_docs/label/2013/202088s005lbl.pdf (accessed September 2022);
2. Xenical (orlistat) Prescribing Information. Available at: https://www.accessdata.fda.gov/drugsatfda_docs/label/2012/020766s029lbl.pdf (accessed September 2022);
3. Saxenda (liraglutide) Prescribing Information. Available at: https://www.accessdata.fda.gov/drugsatfda_docs/label/2014/206321Orig1s000lbl.pdf (accessed September 2022);
4. Qsymia (phentermine/topiramate) Prescribing Information. Available at: https://www.accessdata.fda.gov/drugsatfda_docs/label/2022/022580s021lbl.pdf (accessed September 2022);
5. Wegovy (semaglutide 2.4 mg) Prescribing Information. Available at: https://www.accessdata.fda.gov/drugsatfda_docs/label/2021/215256s000lbl.pdf (accessed September 2022);
6. Saxenda (liraglutide) Summary of product characteristics. Available at: https://www.ema.europa.eu/en/documents/product-information/saxenda-epar-product-information_en.pdf (accessed September 2022);
7. Wegovy (semaglutide 2.4 mg) Summary of product characteristics. Available at: https://www.ema.europa.eu/en/documents/product-information/wegovy-epar-product-information_en.pdf (accessed September 2022).

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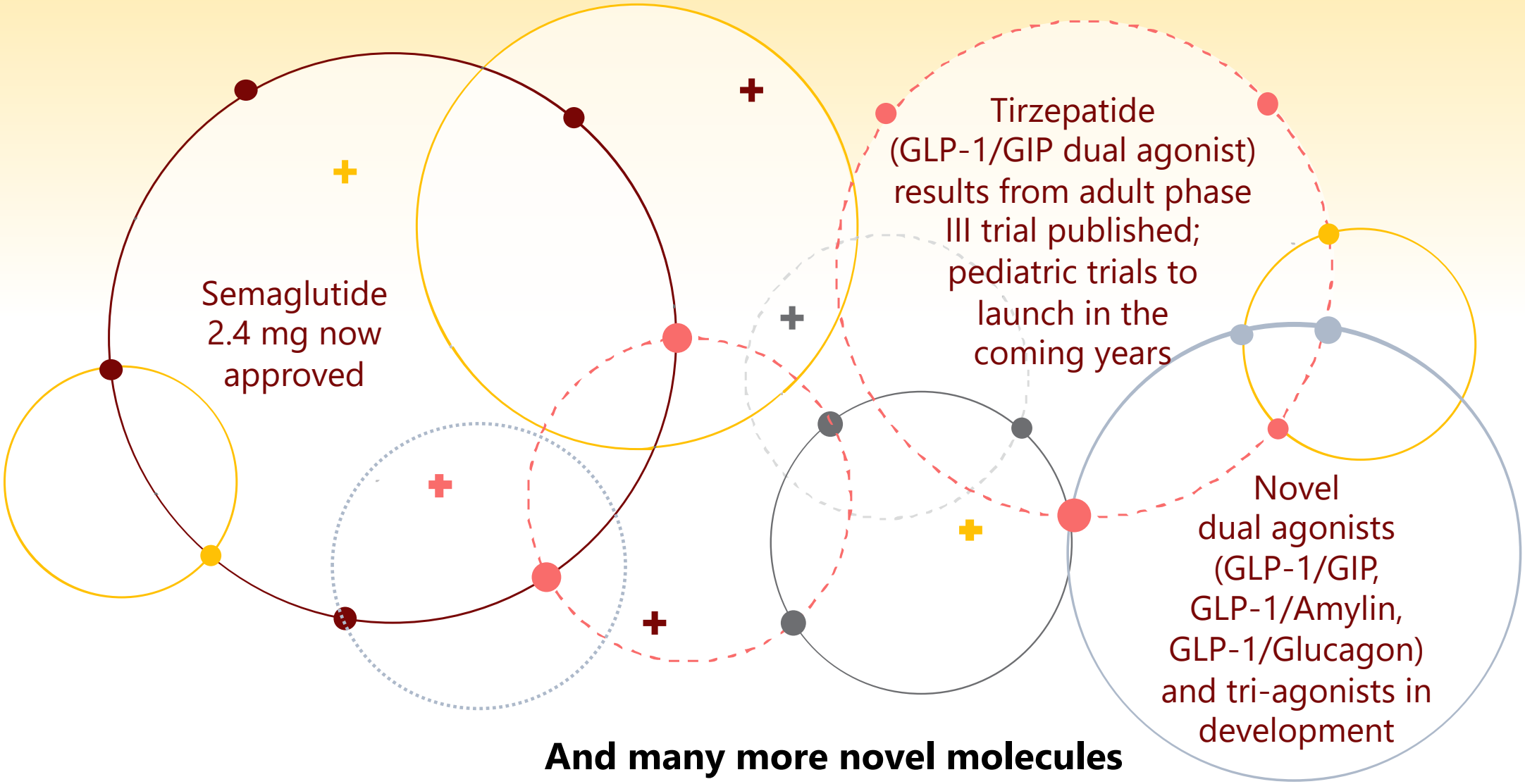
Pediatric Pipeline & Expected Timelines



And many more novel molecules under investigation…

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Metabolic/Bariatric Surgery

Pratt et al. *Surg Obes Relat Dis* 2019.
Armstrong et al. *Pediatrics*. 2019.
Barlow et al. *Pediatrics* 2007.
Styne et al. *JCEM 2017.*

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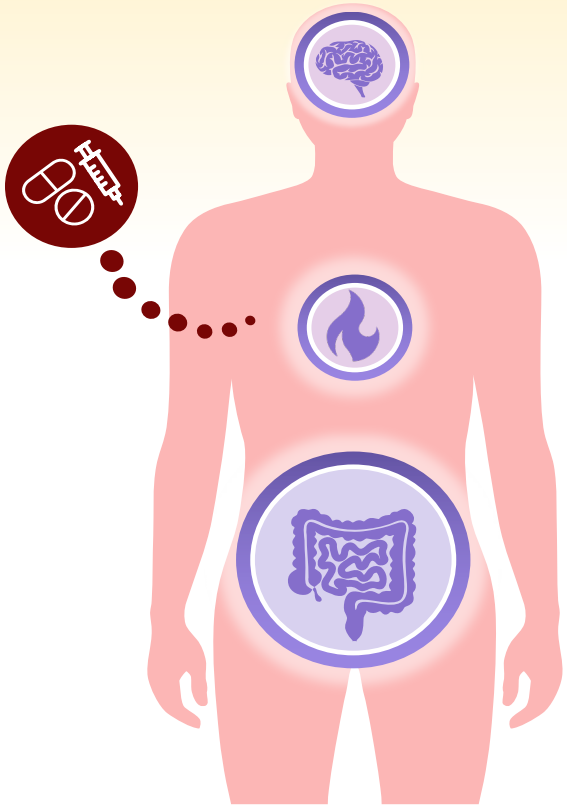
Obesity Treatments: What, When, and How

- What
  - Lifestyle therapy
  - Medication
  - Surgery
- When
  - Toddler age
  - Young childhood
  - Adolescence
- How
  - Starting conversations with healthcare providers
  - Accessing treatments
  - Chronic care: this will be a marathon, not a sprint



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Challenges That Remain

Messaging and narratives (e.g., Health at Every Size)

Stigma and bias

Patient, caregiver(s), and healthcare provider misperceptions and miscommunications (ACTION Teens study)[1]

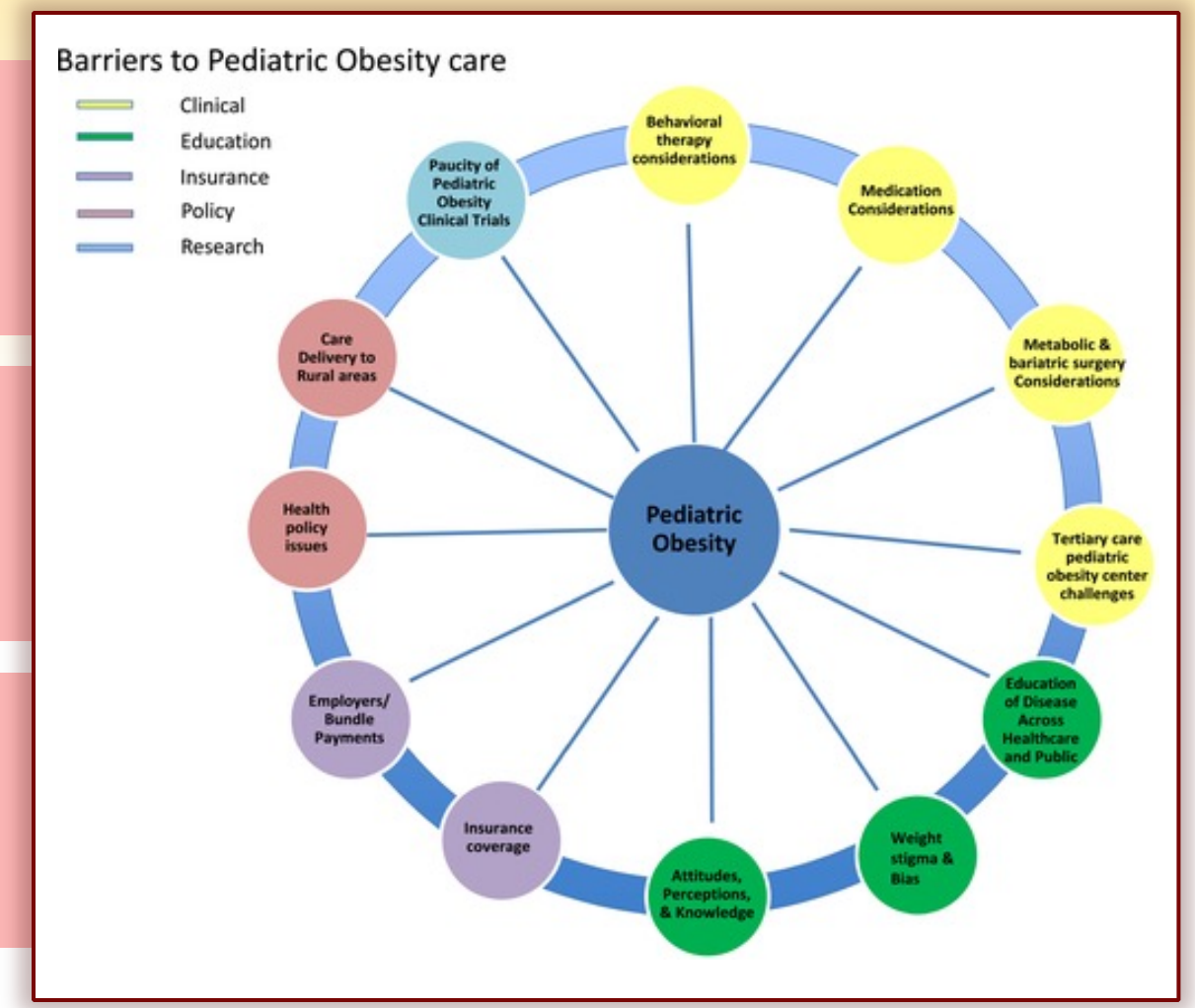
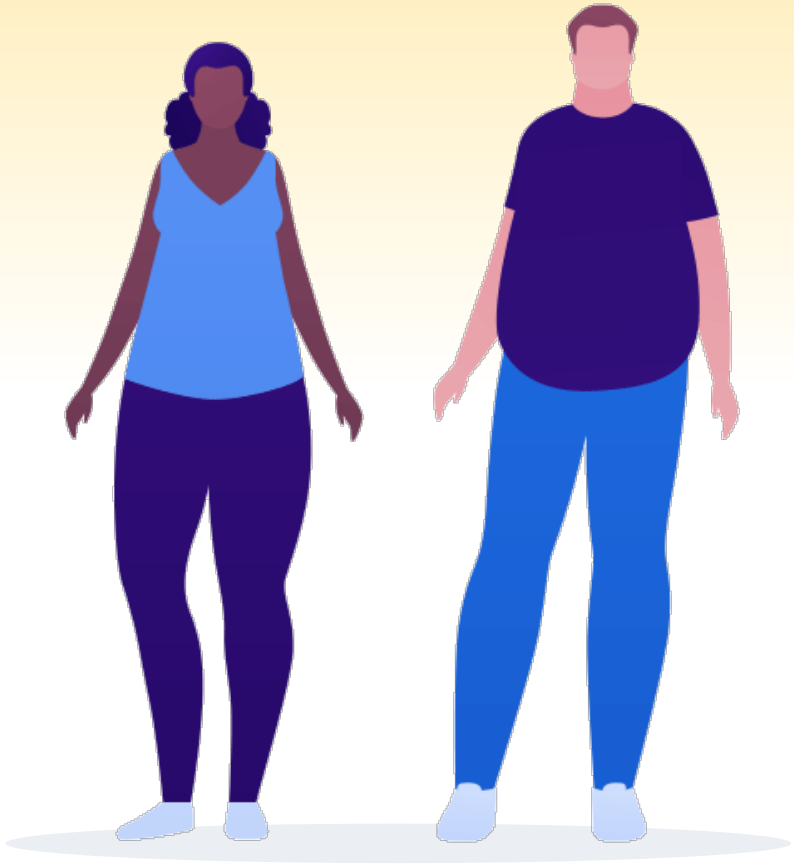


Image from: Srivastava G, Browne N, Kyle TK, O'Hara V, Browne A, Nelson T, Puhl R. Caring for US Children: Barriers to Effective Treatment in Children with the Disease of Obesity. *Obesity* (Silver Spring). 2021 Jan;29(1):46-55. doi: 10.1002/oby.22987. PMID: 34494365. 1. Halford JCG, Bereket A, Bin-Abbas B, Chen W, Fernández-Aranda F, Garibay Nieto N, López Siguero JP, Maffeis C, Mooney V, Osorto CK, Reynoso R, Rhie YJ, Toro-Ramos M, Baur LA. Misalignment among adolescents living with obesity, caregivers, and healthcare professionals: ACTION Teens global survey study. *Pediatr Obes*. 2022 Jul 15:e12957. doi: 10.1111/ijpo.12957. Epub ahead of print. PMID: 35838551.

Challenges That Remain

Overcoming misperceptions about obesity treatments

- Myth: managing weight is simple – just eat less and move more (try harder!)
- Fact: obesity is exceedingly complicated and the body is hard-wired to defend body fat
- Myth: Medication or surgery is the “easy way out”
- Fact: Medications and surgery take the edge off and help level the playing field



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Opportunities To Seize

- Real conversations about obesity are starting – make your voice heard
- On the heels of the new AAP guideline, pediatricians are starting to pay attention
- Be assertive in seeking and demanding access to all obesity treatments for your child
- We have turned a corner: there are more effective pediatric treatments than ever before!