Clinical Flow: Assessment and Evaluation

Consistent with the 2023 AAP Clinical Practice Guideline for the Evaluation and Treatment of Children and Adolescents with Overweight & Obesity.

Screen for Overweight/Obesity
Accurately weigh, measure and chart BMI* trajectory based on age and sex. If obesity, also determine severity.
**Consider possible diagnostic limitations.*

BMI ≥85th Percentile (overweight & obesity)
Conduct obesity-specific evaluation

Communicate Diagnosis to Patient

- Ask permission to discuss BMI/weight
- Avoid labeling by using person-first language
- Use words that are perceived as neutral by parents, adolescents, and children (e.g., unhealthy weight, gaining too much weight for age/height/health)

Obtain Comprehensive Obesity-specific Patient History

Assess individual, structural, and contextual risk and protective factors related to healthy behavior and healthy weight, including: medical history (chief complaint/history of present illness, review of systems, medication history, family history), social determinants of health, individual/family lifestyle behavior history, and mental and behavioral health.

Review of Systems - Relevant Findings

System	Symptoms of Obesity-related Conditions
General	Poor/slowed linear growth velocity, hyperphagia from early childhood, developmental delay, obesity onset <age 5 years or syndromic features
Respiratory	Shortness of breath, snoring, apnea, disordered sleep
Gastrointestinal	Asymptomatic vague abdominal pain, heartburn, dysphagia, chest pain, regurgitation, abdominal pain, enuresis, encopresis, anorexia, right upper quadrant pain; hyperphagia
Endocrine	Polyuria, polydipsia
GYN	Oligomenorrhea, dysfunctional uterine bleeding
Orthopedic	Hip, thigh or groin pain, painful or uneven gait, knee pain, foot pain, back pain, proximal muscle wasting
Mental health	Sadness, depression, anhedonia, body dissatisfaction, school avoidance, poor self-image, impulse eating, distractibility, hyperactivity, purging, restricting intake, binge-eating, night eating, flat affect
Urinary	Nocturia, enuresis
Dermatologic	Rash, darkened skin on flexural surfaces, pustules, abscesses, hirsutism in females, flesh-colored striae, purplish striae, skin fold irritation
Neurologic	AM headache, daytime sleepiness, persistent headache

History Components & Possible Tools

Chief Complaint/History of Present Illness: To determine if obesity is of concern and understand its trajectory

Family History (Obtain all for 1st & 2nd degree relatives): Obesity, type 2 diabetes, cardiovascular disease, hyperlipidemia, hypertension, NAFLD

Medication History: Evaluate for obesogenic medications and possible alternatives

	Components	Tools
Social Determinants of Health	• Food security, economic security, & other social determinants of health (e.g., ACES)	• Safe Environment for Every Kid (SEEK) • Accountable Health Communities (AHC) • Health-Related Social Needs (HRSN) Screening Tool
Individual/ Family Lifestyle Behavior	• Nutrition: eating out, sugar-sweetened beverages, portions, snack habits • Physical activity: motivation/knowledge/competence to engage in physical activity • Recreational screen time • Sleep	• Overall: MaineHealth Let's Go! 5-2-1-0-Healthy-Habits-Questionnaires • Nutrition: Written, electronic, or phone/text-prompted food diaries, 24-hour recall, smartphone tracking applications • Physical Activity: Pedometers or other wearable activity monitors
Mental & Behavioral Health	• Depression: Monitor for symptoms; if ≥12 years old evaluate annually using a formal self-report tool • Other mental health: bullying, anxiety, abuse, ADHD • Disordered eating: skipping meals, using diet pills/laxatives, inducing vomiting, restricting intake, binge-eating, etc.	• Overall: Pediatric Symptom Checklist • Depression: Patient Health Questionnaire (PHQ 2 or 9) • Anxiety: General Anxiety Disorder (GAD-7) or Screen for Child Anxiety Related Disorders (SCARED) assessments • ADHD: Vanderbilt ADHD Rating Scales (VADRS) • Disordered eating: Table 2, AAP Clinical report, "Identification and Management of Eating Disorders in Children and Adolescents"

Conduct a Focused Physical Exam & Obtain Labs

Relevant Physical Exam Findings

Vital signs	Anthropometric
• Hypertension • Increased heart rate	• Changes in height velocity • Changes in weight gain
Gastronintestinal	**Genitourinary**
• Hepatomegaly	• Buried penis
HEENT	**Chest**
• Papilledema • Dental caries • Tonsillar hypertrophy	• Gynecomastia • Cervicodorsal hump
Musculoskeletal	**Skin**
• Gait • Lordosis • Hip pain and/or limp • Genu varum/valgum • Ped planus	• Acanthosis • Hirsutism/acne • Striae • Intertrigo • Pannus

Recommended Labs

	Overweight		Obesity	
	<10y	≥10y	<10y	≥10y
Fasting lipid panel		✓	⚖	✓
FPG, OGTT, or HgbA1C		⚖[b]		✓
ALT		⚖[c]		✓

✓ = Pediatricians & other pediatric health care providers *should* ⚖ = Pediatricians & other pediatric health care providers *may*

[b] = If risk factors present for **Prediabetes/Diabetes** see back for more information on risk & work-up

[c] = If risk factors present for **Non Alcoholic Fatty Liver Disease** see back for more information on risk & work-up

Talking Points: Engaging Family in Diagnostics & Treatment

- There is nobody more important to the health of your child than you; I want to partner with you to help [patient name] work towards improved health
- I am concerned that [patient's name] weight might be having an impact on their physical body and their emotional well-being.
- The good news is we have many treatment options that can help [patient name].
- One of the ways I can best help you and [patient name] is to understand the impact [overweight/obesity] is having on their body is to get [labs and/or insert diagnostic test].
- Together, with information from the labs and test and key information from your family, we can work to develop a treatment plan specific to [patient name].
- If it is okay with you, I would like for us to meet again in a month to develop a treatment plan that we can collectively work on over this next year.

REFER TO BACK: Obesity-related Co-morbid Conditions

This resource has been developed by the American Academy of Pediatrics' Institute for Healthy Childhood Weight

9/29/2022

Common Obesity-related Comorbidities: Risk Factors, Disparities in Prevalence, Presentation, and Diagnostic Work-up [a,b,c]

Blount Disease	**Risk Factors:** Family history of Blount Disease, ambulation before 12 month
	Disparities in Prevalence: non-Hispanic Black, Hispanic populations
	Presentation: Leg or knee pain, abnormal gait with bowing of lower legs and leg length discrepancy, a triad of asymmetrical tibia vara, tibial torsion and precurvatum
	Diagnostic work-up: Obtain plain films (long leg AP and lateral x-rays, knee AP and lateral x-rays). When used, MRI provides a more sensitive investigate of the deformity.
Depression	**Risk Factors:** Personal or family history of depression, substance use, trauma, frequent psychosomatic complaints, psychosocial stressors and other mental health conditions.
	Presentation: Irritability, fatigue, insomnia, excessive sleeping, decline in academic performance, family conflict, weight changes, sadness, depression, anhedonia, body dissatisfaction, school avoidance, poor self-image, flat affect
	Diagnostic work-up: Screen for depression with self-report tool, such as PHQ9, annually if ≥12 years old and if symptoms. Assessment for depression should also include direct, separate interviews with the patient and family members to include functional impairment at home, school, and peer settings and safety and/or suicide risk.
Dyslipidemia	**Risk Factors:** Cigarette use, hypertension (HTN), diabetes, adverse childhood experiences (ACES), family history of cardiovascular disease in 1st or 2nd degree relative (≤55 years for males, ≤65 years for females) with history of myocardial infarction, sudden death, or HTN
	Presentation: Nothing specific
	Diagnostic work-up: Obtain fasting lipid panel. See CPG Table 8 for diagnostic criteria.
Hypertension (HTN)	**Risk Factors**: ACES, sodium/salt intake, physical inactivity, abnormal sleep duration, obstructive sleep apnea
	Disparities in Prevalence: non-Hispanic Black, Hispanic, and low SES populations
	Presentation: Nothing Specific
	Diagnostic work-up: Conduct routine blood pressure measurement with appropriate cuff size in children ≥3 years. See CPG Table 12 for diagnostic criteria.
Idiopathic Intracranial Hypertension (IIH)*	**Risk Factors**: Females of child-bearing age, some medications (e.g., doxycycline, tetracyclines, retinoic acid, sulfonamides), autoimmune disorders (e.g., systemic lupus erythematosus), hormonal disorders (e.g., Cushing disease, Addison disease), and polycystic ovarian syndrome
	Presentation: Persistent/progressive headaches, pulsatile synchronous tinnitus, visual changes or loss of vision, papilledema, high index of suspicion if new-onset headaches and significant weight gain (5%-15% of body weight) in past 12-18 months
	Diagnostic work-up: ***Urgent concern: Refer to ophthalmologist and neurologist or integrated IIH clinic if high degree of suspicion.**
Nonalcoholic Fatty Liver Disease (NAFLD)	**Risk Factors (Diagnosis):** Male sex, ≥10 years, sibling with NAFLD, prediabetes, diabetes, obstructive sleep apnea, dyslipidemia **Risk Factors (Severe Disease/Progression):** Adolescent ≥14 y, higher/increasing ALT, elevated baseline AST, GGT, and LDL cholesterol, prediabetes/diabetes mellitus, obstructive sleep apnea, increasing weight/waist circumference
	Disparities in Prevalence: Hispanic and Asian populations
	Presentation: Asymptomatic vague abdominal pain, hepatomegaly
	Diagnostic work-up: Obtain ALT.
Obstructive Sleep Apnea (OSA)	**Risk Factors**: Tonsillar hypertrophy, craniofacial anomalies, trisomy 21, and neuromuscular disorders
	Presentation: Frequent snoring, daytime sleepiness, gasps or labored breathing during sleep, disturbed sleep, nocturnia, enuresis, headaches, and inattention and/or learning problems, morning headache, exam finding of tonsillar hypertrophy, adenoidal cadies, micro/retrognathia, high-arched palate and elevated BP
	Diagnostic work-up: For patients with obesity and ≥1 symptom of disordered breathing, obtain a polysomnogram.
Polycystic Ovarian Syndrome (PCOS)	**Presentation**: Menstrual irregularities ≥2 years after menarche (oligomenorrhea, amenorrhea, dysfunctional uterine bleeding) and signs of androgen excess (hirsutism, acne, alopecia)
	Diagnostic work-up: Laboratory tests may include 17-OG progesterone, total testosterone, free testosterone, SHBG, DHEAS, androstenedione, LH, FHS, estradiol, prolactin, free T4, TSH, and insulin.
Prediabetes/ Diabetes	**Risk Factors**: Maternal history of diabetes or gestational diabetes, family history of diabetes in 1st or 2nd degree relative, signs of or conditions associated with insulin resistance (acanthosis nigricans, HTN, dyslipidemia, PCOS, small for gestational age), use of obesogenic psychotropic medications
	Disparities in Prevalence: American Indian/Alaskan Native, non-Hispanic Black, and Hispanic populations
	Presentation: polydipsia, polyphagia, polyuria, nocturia, enuresis, acanthosis nigricans, blurred vision, unexplained or unexpected weight loss or fatigue
	Diagnostic work-up: Obtain fasting glucose or 2hr OGTT or HbA1C. See CPG Table 10 for diagnostic criteria.
Slipped Capital Femoral Epiphysis (SCFE)#	**Risk Factors**: Male sex; 9-16 years (rapid growth), hypothyroidism, hypopituitarism
	Disparities in Prevalence: non-Hispanic Black, Hispanic, and American Indian/Alaskan Native populations
	Presentation: Hip, thigh, knee, or groin pain, painful or uneven gait, external rotation with passive hip flexion, limitation of internal rotation and antalgic gait, pain with internal rotation of hip
	Diagnostic work-up: **#Urgent concern: If SCFE is suspected, obtain plain films (bilateral hip x-rays-AP & lateral frog-leg x-ray), restrict activity immediately & completely, and place urgent referral to orthopedic surgeon or Emergency Department.**

[a] See CPG Appendix 3 for expert guidance on the frequency of retesting and initial management for common comorbidities.
[b] Disparities in prevalence seen in certain racial or ethnic minority or low SES populations (relative to white or high SES populations) are interpreted as health inequities, due to differences in exposure to epigenetic, social, and/or environmental risk factors. Only those specifically mentioned in the CPG are included here.
[c] Other co-occurring conditions are also possible, e.g., asthma, deconditioning, gastroesophageal reflux disease, constipation, gall bladder disease, intertrigo, hidradenitis suppurativa, candida, etc.

American Academy of Pediatrics
Institute for Healthy Childhood Weight
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