Algorithm for Screening, Diagnosis, Evaluation, and Treatment of Pediatric Overweight and Obesity

SCREENING

P&PHCPs *should* measure height & weight, calculate BMI, and **assess BMI percentile** using age- and sex-specific CDC growth charts or severe obesity growth charts **for all children 2-18 years** (KAS 1)

BMI ≥85th percentile?

- No → Repeat at least annually
- Yes ↓

DIAGNOSIS

Overweight	Obesity	Severe Obesity
BMI ≥85th to <95th percentile	BMI ≥95th percentile	BMI ≥120% of the 95th percentile

EVALUATION

Components of Comprehensive Evaluation	Overweight		Obesity	
	<10y	≥10y	<10y	≥10y
Comprehensive history, MBH screening, SDOH evaluation, physical examination, & diagnostic studies (KAS 2)	✓	✓	✓	✓
Blood pressure (KAS 8)	✓[a]	✓	✓[a]	✓
Fasting lipid panel (KAS 3, 3.1, 5)		✓	⚖	✓
FPG, OGTT, or HgbA1C (KAS 3, 3.1, 6) & **ALT** (KAS 3, 3.1, 7)		⚖[b]		✓

Elevated BP?[c]

- Yes → Refer to **AAP High BP CPG[d]**
- No → Repeat at every visit

Abnormal labs?[e]

- Yes → Refer to **Appendix 4**
- No → *May* repeat testing in 2 years or sooner if changes in exam/risk

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]

✓ = P&PHCPs *should*; ⚖ = P&PHCPs *may*

✓[a] = In children **3y and older** with overweight/obesity, P&PHCPs *should* evaluate for hypertension using blood pressure

⚖[b] = **In the presence of risk factors for T2DM or NAFLD,** P&PHCPs may evaluate for abnormal glucose metabolism and liver function. **T2DM risk factors:** family history of T2DM in 1st or 2nd degree relative, maternal gestational diabetes, signs of insulin resistance or conditions associated with insulin resistance (acanthosis nigricans, hypertension, dyslipidemia, polycystic ovary syndrome, or small-for-gestational-age birth weight), obesogenic psychotropic medication. **NAFLD risk factors:** Male sex, prediabetes/diabetes, obstructive sleep apnea, dyslipidemia, or sibling with NAFLD.

[c] **Elevated BP**: ≥90th percentile (<13 years old) or ≥120/80 (≥ 13 years) – confirm initial high BP reading with average of repeat BP x 2 using auscultation to classify as abnormal

[d] **2017 Clinical Practice Guideline for Screening and Management of High Blood Pressure in Children and Adolescents** (link)

[e] **Abnormal labs results for which additional testing is recommended**: LDL ≥130; TG ≥100 (<10 years) or 130 (≥10 years); Prediabetes: HgbA1C ≥5.7 – 6.4; FBS 100-125, OGTT 140-199; T2DM: FPG ≥126mg/dL, OGTT ≥200, HgbA1C ≥6.5; ALT ≥2x upper limit of normal (≥52 males / ≥44 females)

[f] Use **Motivational Interviewing** to engage patients and families in treating overweight and obesity

[g] Provide or refer to **Intensive Health Behavior and Lifestyle Treatment**. Health behavior and lifestyle treatment is more effective with greater contact hours; the most effective include 26 or more hours of face-to-face, family-based, multi-component treatment over a 3-12-month period.

[h] Offer **weight loss pharmacotherapy**, according to medication indications, risks, and benefits, as an adjunct to health behavior and lifestyle treatment.

[i] For adolescents ages **13y and older with severe obesity,** offer **referral for evaluation for metabolic and bariatric surgery** to local or regional comprehensive multidisciplinary pediatric metabolic and bariatric surgery centers. **Eligibility criteria for surgery per 2018 American Society for Metabolic and Bariatric Surgery Pediatric guidelines** (link): (1) BMI ≥35 kg/m2 or 120% of the 95th percentile (whichever is lower) with clinically significant disease; examples include but are not limited to cardiovascular disease risk (hyperlipidemia, HTN, insulin resistance), T2DM, depressed HRQoL, GERD, OSA, NAFLD, Blount Disease, SCFE, IIH; or (2) BMI ≥40 kg/m2 or 140% of the 95th percentile (whichever is lower).

Abbreviations: KAS: key action statement; **P&PHCPs**: pediatricians and other pediatric health care providers; **y**: years old; **SDOH**: social determinants of health; **MBH**: mental and behavioral health; **FPG:** fasting plasma glucose; **OGTT**: 2-hour plasma glucose after 75-gram oral glucose tolerance test; **HbA1c**: glycosylated hemoglobin; **ALT**: alanine transaminase test; **T2DM**: Type 2 Diabetes Mellitus; **NAFLD**: non-alcoholic fatty liver disease; **BP**: blood pressure; **CPG**: clinical practice guideline, **IIH**: Idiopathic intracranial hypertension; **NASH**: non-alcoholic steatohepatitis; **SCFE**: slipped capital femoral epiphysis; **GERD**: gastroesophageal reflux disease; **AHI**: apnea hypopnea index