

Pediatric Obesity Care Path (Ages 3-17)

Screening and Diagnosis

- Determine BMI-for-age percentile (Per EMR growth charts or cdc.gov/growthcharts/clinical_charts.htm)
- <85th percentile NOT OVERWEIGHT
- 85th—94th percentile OVERWEIGHT
- ≥95th percentile OBESE

(For infants and children under 2 years, overweight is determined as weight-for-length greater than the 95th percentile, not by BMI)

Treatment

Weight-related risks & concerns

Even if BMI for age is below the 85th percentile, the patient may be at risk for overweight/obesity and require further evaluation if they have any of the following:

- Parental obesity. This increases risk of overweight children by 2- or 3-fold.
- Family history of type 2 diabetes, heart disease before age 55 in father or 65 in mother, high blood pressure, high cholesterol, or eating disorders.
- High blood pressure. Measure at every well-child visit or least once annually. Refer to NIH chart to measure percentiles, then see (h) below for guidelines.
- Patient or family concern about the patient's weight.
- Medical signs and symptoms: short stature/developmental delay, acanthosis nigricans, hepatomegaly/right upper-quadrant pain, symptoms of sleep apnea.

Patient presents for well-child check or routine visit

1. Assess lifestyle and health behaviors, risks, and concerns

- Determine weight risk status with BMI percentile.
- Assess for accelerated weight gain
 - Accelerated weight gain is defined as weight rising through two major centiles within one year.
- Assess for weight-related risks and concerns

Assess Pediatric physical activity at every routine visit:
Less than 60 minutes/day physical activity 7 days/wk?

Nutrition concerns?

Sleep or support concerns?

Obese, overweight plus ≥ 1 weight-related risk or concern, or recent accelerated weight gain?

Yes

Yes

2. Advise on evidence-based interventions

Physical Activity	Nutrition	Sleep, Support	Weight
<ul style="list-style-type: none"> └ Advise on importance of physical activity for physical and mental health. └ Advise to start or increase physical activity to reach 60 minutes per day, 7 days per week. └ Advise to reduce sedentary behaviors (sitting, screen time). Goal is less than 2 hours/day. 	<ul style="list-style-type: none"> └ Advise on key evidence-based nutrition guidelines to address patient's high risk areas: <ul style="list-style-type: none"> ◦ Eat a healthy breakfast daily ◦ Eat more fruits and vegetables ◦ Limit or eliminate sweetened drinks ◦ Eat meals as a family └ Consider referral for nutrition education and counseling with a registered dietitian. 	<ul style="list-style-type: none"> └ Explain the significance of appropriate sleep in relation to overall health and weight management. └ Advise to be positive about food and body image. └ Assess for stress and eating disorders. 	<ul style="list-style-type: none"> └ Perform further medical evaluation: <ul style="list-style-type: none"> ◦ Assess for underlying causes or conditions (a) and contributing medications (b). ◦ Assess for secondary complications or comorbidities (d). └ If reversible causes or complications, treat concurrently with weight concerns. └ Determine weight maintenance or weight loss target based on BMI, age, and secondary complications (c).

3. Agree on an area of focus, and assist patients and families with lifestyle changes.

- Agree on an area of focus.
- Agree on weight maintenance or weight loss target if appropriate.
- Agree on goals based on evidence-based behaviors, and document them on a written care plan, that both you and the patient sign.
- Engage your team members to assist with lifestyle changes to help the patient and family identify a specific, measurable goal and make a plan for success.
- Provide resources and educational materials to support therapies.

4. Arrange for referrals, reporting mechanisms, and follow-up appointments.

- As appropriate, refer to patient to programs such as Shapedown, and specialists such as a dietitian
- Commit to tracking and reporting processes
- Schedule follow-up appointments

Activate Clinic Team

(a) Possible underlying causes or conditions			(b) Medications that may contribute to weight gain
Conditions	Whom to test	Tests/referrals	
Endocrine <ul style="list-style-type: none"> • Thyroid disorder • Cushing syndrome 	Short stature, goiter, history of decelerated linear growth, or Cushingoid appearance	<ul style="list-style-type: none"> • TSH • 24-hour urine cortisol OR late-night salivary cortisol 	<ul style="list-style-type: none"> • High-dose, chronic glucocorticoid treatment • Progestins (e.g. depo medroxyprogesterone acetate, norethindrone) • Valproate • Tricyclic antidepressants (e.g. imipramine, amitriptyline) • Cyproheptadine • Trazodone • Atypical neuroleptics, e.g., olanzapine, risperidone, quetiapine, ziprasidone, aripiprazole
Genetic Prader-Willi, BardetBiedl, BeckwithWiedemann, and other genetic syndromes	Developmental delay, dysmorphic features (short stature, big tongue, large head, facial dysmorphia), infantile obesity, hypogonadism.	<ul style="list-style-type: none"> • Refer for genetic testing, counseling 	

(c) Weight Maintenance or Weight-loss Targets

		OVERWEIGHT (85-95 th ile)	OBESE (>95 th ile)
Age 2-7 years	No secondary complications	MAINTENANCE*	MAINTENANCE*
	Secondary complications	MAINTENANCE*	LOSS [no more than 1 pound (0.5kg) per month]
Age >7 years	No secondary complications	MAINTENANCE*	LOSS [2-4 pounds (1-2kg) per month]
	Secondary complications	LOSS [2-4 pounds (1-2kg) per month]	LOSS [up to 1-2 pounds (0.5kg) per week]

*Maintain weight to decrease BMI with increasing height

(d) Secondary complications or comorbidities

Conditions	Whom to test	Tests/referrals
Dyslipidemia	<ul style="list-style-type: none"> • Overweight or obese 	<ul style="list-style-type: none"> • Random total cholesterol, HDL (to calculate non-HDL cholesterol; if >145, fasting lipid)
Hypertension	<ul style="list-style-type: none"> • Everyone 	<ul style="list-style-type: none"> • Over 95thile for gender, age, and height; confirmed at 3 consecutive visits
Hyperglycemia	<ul style="list-style-type: none"> • Age 10 (or onset of puberty) AND • Family ethnic history OR signs of insulin resistance (acanthosis nigricans, PCOS, etc.) 	<ul style="list-style-type: none"> • Random plasma glucose; if >140, follow with fasting plasma glucose (FPG) within 1-2 days OR • HbA1c • If FPG is 100-120, repeat
Non-alcoholic fatty liver disease	<ul style="list-style-type: none"> • Right upper quadrant pain • Enlarged liver 	<ul style="list-style-type: none"> • Liver enzymes
Sleep apnea, airway obstruction	<ul style="list-style-type: none"> • Sleep disturbances • Snoring • Daytime somnolence 	<ul style="list-style-type: none"> • Fully polysomnogram in certified sleep lab
Orthopedic problems	<ul style="list-style-type: none"> • Hip, knee, or foot pain • Flat feet • Limited range of motion • Lower-leg bowing 	<ul style="list-style-type: none"> • X-ray if positive, refer to orthopedic specialist • Physical Therapy
Depression/anxiety	<ul style="list-style-type: none"> • Everyone 	<ul style="list-style-type: none"> • Child/adolescent Mental health specialist
Polycystic ovary syndrome (PCOS)	<ul style="list-style-type: none"> • Hirsutism • Abnormal periods 	<ul style="list-style-type: none"> • Free and total testosterone • DHEAS

References: "Lifestyle and weight management for children and adolescents." Intermountain Healthcare, n.d. Web. 26 March 2018.

Please note: The Via Christi Health Alliance in Accountable Care, Inc. (the "ACO") in consultation with its affiliated ACO providers developed these care pathways and guidelines based on the most recent evidenced based medicine data. The ACO is continually researching and updating its care pathways and guidelines to reflect the most recent evidence based standards. This information is intended to provide health professionals with information to improve the quality of care and ultimately lower the cost of such care to the patients they serve. By providing this evidence based information, it is not the intention of the ACO to provide specific medical advice for particular patients. Rather we urge each provider to review this material when consulting and evaluating the treatment options suitable for their patients. The ACO affiliated providers are solely responsible for confirming the accuracy, timeliness, completeness, appropriateness and helpfulness of this material and making all medical, diagnostic or prescription decisions.