

Hyperlipidemia

FAST FACTS

7.8%

of children ages 8–17 years have elevated total cholesterol levels (≥ 200 mg/dL)

7.4%

of children ages 12–19 years have elevated LDL-C (≥ 130 mg/dL)

1:250

prevalence of heterozygous familial hypercholesterolemia

Cincinnati Children's Lipid Clinic will, as appropriate for each patient, rule out secondary dyslipidemia, perform advanced lipid testing, initiate and manage statin therapy, provide consultation with a dietician to evaluate nutritional needs and assist with dietary modifications, and/or counsel patients and their families on healthy lifestyle behaviors.

If you have clinical questions about a patient with hyperlipidemia, call the Physician Priority Link at 513-636-7997 or 1-888-987-7997. To refer a patient directly, call 513-636-0135.

Hyperlipidemia is a condition defined by high levels of lipids in the blood, including cholesterol and triglycerides. High lipid levels in youth are associated with atherosclerosis in adults, so screening is important in children and teens. Early identification and intervention can prevent ischemic cardiovascular events in adulthood.

ASSESSMENT

Perform a standard health history and physical exam (HPE), including a thorough family history for cardiovascular (CV) disease.

HPE RED FLAGS

Family History

- Parent/grandparent/sibling/aunt/uncle (<55yo males or <65yo females) with:
 - Coronary artery disease (CAD) by angiography
 - Myocardial infarction
 - Angina
 - Peripheral vascular disease
 - Stroke
 - Sudden cardiac death
- Parent with a total cholesterol (TChol) >240 mg/dL

Patient History

- Smoking
- High blood pressure
- BMI >95th percentile
- Diabetes
- Medical conditions with increased risk:
 - Chronic renal disease
 - Transplant recipient
 - Kawasaki disease with aneurysms
 - HIV
 - Chronic inflammatory diseases

MANAGEMENT/TREATMENT

Screen all children 9–11 years, 17–21 years and children with red flags ages 2–8 years for high cholesterol. First screen can be non-fasting non-HDL-cholesterol (total cholesterol minus HDL cholesterol). Result <120 mg/dL is ideal. Between 120–140 mg/dL—repeat test in a few weeks. With results >145 mg/dL, order fasting complete lipid profile.

Recommend healthy diet and exercise for all children, regardless of lipid levels. After 6 months, if lifestyle changes are ineffective and secondary causes have been ruled out, initiate drug therapy as outlined in the algorithm (other side). For more information for families, refer them to the American Heart Association website: www.AHA.org.

WHEN TO REFER

Refer patients with any of the following test results to Cincinnati Children's Lipid Clinic:

Single fasting result	Average multiple fasting levels
TChol >240mg/dL	TChol >200mg/dL
LDL >160 mg/dL	LDL >130 mg/dL
HDL < 30 mg/dL	HDL < 35 mg/dL
TG >250 mg/dL	TG >100 mg/dL (<10yrs) or >130 mg/dL (>10yrs)

If you would like additional copies of this tool, or would like more information, please contact the Physician Outreach and Engagement team at Cincinnati Children's.

Hyperlipidemia

Inclusion Criteria

- Universal Screening in children 9–11 and 17–21 years of age
- Screening in high-risk children 2–8 years of age

Patient Presents

Screening

- Start with a non-fasting non-HDL-Cholesterol = Total Cholesterol minus HDL Cholesterol
 - <120 mg/dL is ideal
 - 120–144 mg/dL requires a repeat in a few weeks
 - >145 mg/dL requires a fasting complete lipid profile
- Tips for obtaining an accurate fasting complete lipid profile
 - Draw after a 12-hour fast
 - Do not obtain during acute illness
 - LDL is not accurate if TG >300 mg/dL and a direct LDL test must be requested

HPE RED FLAGS

Social History

- History of smoking or vaping
- History of alcohol intake
- Excessive intake of dietary fats
- Sedentary lifestyle

Single Fasting Level or Average of Multiple Fasting Levels

- TChol >240 mg/dL or >200 mg/dL
- LDL >160 mg/dL or > 130 mg/dL
- HDL <30 mg/dL or <35 mg/dL
- TG >250 mg/dL or > 100 mg/dL (<10yrs) / >130 mg/dL (>10yrs)

Medical History

High Risk Medical Conditions:

- Obesity ≥97th percentile
- Hypertension on medication
- Diabetes
- Chronic renal disease
- Heart or kidney transplant
- History of Kawasaki disease with aneurysms
- Current smoker

Moderate Risk Conditions:

- Obesity ≥95th to ≤97th percentile
- Hypertension not on medication
- Nephrotic syndrome
- History of Kawasaki disease with regressed aneurysm
- HIV infection
- Chronic inflammatory disease

Family History

Parent, grandparent, aunt/uncle, or sibling <55 years (male) or <65 years (female) with:

- Coronary artery disease
- Myocardial infarction
- Angina
- Stroke
- Peripheral vascular disease
- Sudden cardiac death

Parent with a total cholesterol level >240 mg/dL

Yes

Any Red Flags?

No

GOAL

To identify patients with cardiovascular risk and that require initiation of medication

Refer to Cincinnati Children's Lipid Clinic

- Consult with a registered dietitian
- Counsel patients and families on healthy lifestyle behaviors
- Perform advanced lipid testing
- Evaluate for secondary dyslipidemias
- Medications if indicated:
 - If lifestyle changes are ineffective after 6 months and:
 - LDL >190 mg/dL
 - LDL >160 mg/dL with a positive family history or 1 high level risk condition or 2 moderate level risk conditions
 - LDL >130 mg/dL with 2 high level risk conditions or 1 high level plus 2 moderate level risk conditions

GOAL

Ideal cardiovascular health

Discuss healthy diet and exercise for all children at every well child check

- Dietary intake:
 - ≤30% calories from fat per day (10% saturated and 20% unsaturated)
 - <300mg of cholesterol
 - Avoid trans fat
 - Limit sugar-sweetened beverage
 - Increase whole fruits and vegetables
- Encourage 1 hour of physical activity per day

Discuss high impact social risk factors with older children and adolescents at well child checks

- Smoking and alcohol intake

For urgent issues, or to speak with the specialist on call 24/7, call the Physician Priority Link at 1-888-987-7997.