

# The Congenital Heart Collaborative

University Hospitals  
Rainbow Babies & Children's  
Nationwide Children's Hospital

## Lipid Screenings in Children and Adolescents



## The Congenital Heart Collaborative

University Hospitals Rainbow Babies & Children's Hospital and Nationwide Children's Hospital have formed an innovative affiliation for the care of patients with congenital heart disease from fetal life to adulthood. The innovative collaboration provides families with access to one of the most extensive and experienced heart teams – highly skilled in the delivery of quality clinical services, novel therapies and a seamless continuum of care.

## Lipid Screening in Children and Adolescents

Ischemic cardiovascular disease (CVD), including coronary heart disease and stroke, is characterized by reduced blood flow to the heart. It is the most common cause of mortality in the world. With rising rates of obesity, type 2 diabetes, atherosclerosis and other known risk factors for CVD, it is increasingly important to identify at-risk populations to prevent the development of future CVD events with effective management.

In 2011, the National Heart, Lung, and Blood Institute (NHLBI) Expert Panel published updated guidelines for cardiovascular health and CVD risk reduction in youth. One of the main points of these guidelines is the strong recommendation for universal lipid screening for patients who are between 9 and 11 years old and a second universal screening when patients are between 17 and 21 years old.

However, targeted (selective) screening should be done starting at 2 years old if the patient has established risk factors, including:

- Parent with known dyslipidemia
- Family history of early CVD
- Hypertension
- Obesity
- Tobacco use
- Diabetes (type 1 and type 2)
- Kidney disease
- Heart transplant
- Kawasaki disease
- Chronic inflammatory disease
- HIV
- Nephrotic syndrome

## Screening Recommendations

Below 2 years old	No screening recommended
2 – 9 years old	Selective screening with fasting lipid panel if child has established risk factors (see above)
9 – 11 years old	Universal screening strongly recommended with nonfasting non-HDL cholesterol
11 – 18 years old	Selective screening (as above)
18 years old	Universal screening

## Interpreting Lipid Values

Nonfasting and fasting lipid panels are used to measure the amount of LDL, HDL and total cholesterol in the blood. Nonfasting panels are typically used for universal screening because the patient does not have to do any preparation for the test. However, if the nonfasting panel is abnormal or borderline, a fasting lipid panel should be done for more accurate assessment.

Nonfasting: Non-HDL cholesterol should be less than 145, and HDL should be above 40.

## Interpreting Lipid Values (in mg/dL) for Children and Adolescents

	Desirable	Borderline	High Risk
Total Cholesterol	< 170	170 – 199	≥ 200
Non-HDL	< 120	120 – 144	≥ 145
LDL	< 110	110 – 129	≥ 130
HDL	> 45	40 – 45	< 40
Triglycerides (0 – 9 years)	< 75	75 – 99	≥ 100
Triglycerides (10 – 19 years)	< 90	90 – 129	≥ 130
Cholesterol/HDL Ratio	< 3.4		> 5.0



## How to Treat Dyslipidemia in the Pediatric Patient

The NHLBI guidelines focus on lifestyle modification for the first six months after diagnosis in nearly all patients. Much of the initial management of identified CVD risk factors can be done in the primary care setting if nutrition support and other lifestyle counseling are available.

When lifestyle modifications fail to reduce the lipids to the desired level in patients with extreme lipid disorders, pharmacotherapy is recommended.

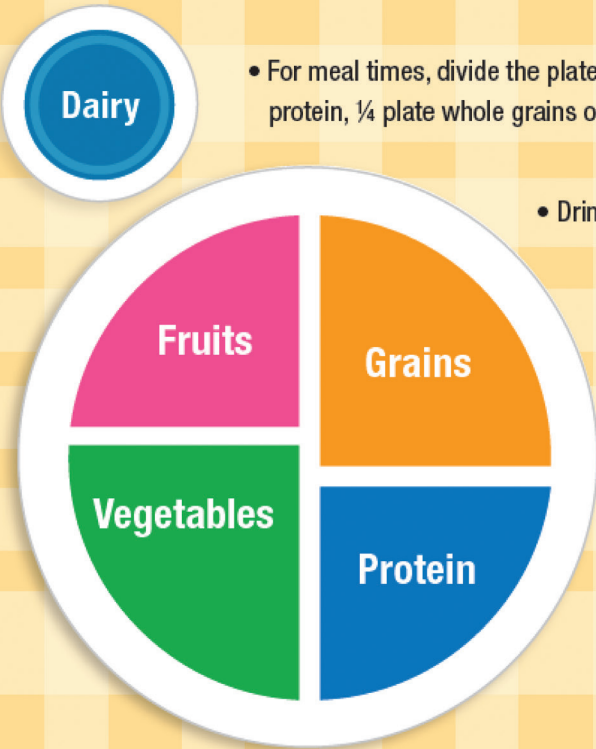
The back panel of this practice tool provides sample diet and exercise recommendations to help you get started. For more information about diet and exercise in children with borderline-to-high cholesterol, call 216-844-3528 to speak with a specialist.

## Family Guide to Diet and Exercise Recommendations

The following recommendations are good for everyone but are of particular importance for people who are at risk for cardiovascular disease. Making healthy choices now is the foundation for a healthy heart into adulthood.

**Exercise guidelines:** Exercise 60 minutes every day divided among aerobic, bone loading and muscle strengthening physical activities. If you are currently inactive, start with 10 minutes a day or 10 minutes most days and add an additional 5 minutes every week or every two weeks, depending on your ability. It is important to work with your physician on an exercise plan that is accessible and safe.

**Nutrition guidelines:** Follow MyPlate recommendations. More information about MyPlate is available at [ChooseMyPlate.gov](http://ChooseMyPlate.gov).



- For meal times, divide the plate as follows:  $\frac{1}{2}$  plate fruits and non-starchy vegetables,  $\frac{1}{4}$  plate lean protein,  $\frac{1}{4}$  plate whole grains or starchy vegetables, and low-fat dairy.
- Drink water, low-fat dairy (1 percent or skim milk) and sugar-free beverages.
- Do not skip meals.
- Eat a healthy breakfast every day.
- Limit intake of sugary or fatty foods
- Limit intake of sugary beverages to 4-6 oz per day (juice, regular soda pop, fruit-flavored drinks, lemonade, sports drinks and sweetened tea).

Source: [ChooseMyPlate.gov](http://ChooseMyPlate.gov)

### When to Refer to a Pediatric Cardiologist\*

At The Congenital Heart Collaborative, we will see any patient with abnormal fasting lab results. If nonfasting lab results are abnormal, the referring physician should order a fasting lipid panel before the specialist visit.

Urgent referrals are recommended for LDL greater than 190 and triglycerides greater than 500.

*\*For late adolescent and young adult patients who have no underlying congenital heart disease, you may consider referral to an adult cardiologist.*



## Physician-to-Physician Consultation Line

**216-UH4-ADOC** (216-844-2362)

## Physician Access Line

(Patient transfers, admissions, referrals, emergency department referrals, appointments)

**216-UH4-PEDS (216-844-7337) | [Rainbow.org](http://Rainbow.org)**