

Nutrition for Your Child

Controlling Your Child's Cholesterol

Knowing your child's cholesterol level is an important step in maintaining a healthy heart for life. Most children with high cholesterol levels do not experience symptoms, so it is important to complete a blood test known as a **fasting lipid panel**. High cholesterol levels often run in families, so that is why your pediatrician asks you about family members with high cholesterol and heart disease.

Cholesterol comes from two places. It is produced in the body by the liver, and it is also supplied by some of the foods we eat. Cholesterol is used in the body in a number of important ways. Cholesterol forms part of the cell membrane, serves as the raw material to form vitamin D, aids digestion as a component of bile, and is needed to form a number of hormones in our body.

Normal Lipid Levels

The table below shows the ideal values for your child's cholesterol and other blood lipids. If your child's levels are considered abnormal, there are a number of changes in diet and activity that can make a positive impact and bring those levels within an acceptable range.

BLOOD LIPID	Acceptable	Borderline	Abnormal Levels
Total Cholesterol	Less than 170 mg/dl	170-199 mg/dl	200 mg/dl or greater
LDL Cholesterol - "bad" cholesterol	Less than 110 mg/dl	110-129 mg/dl	130 mg/dl or greater
HDL Cholesterol - "good" cholesterol	Greater than 45 mg/dl	40-45 mg/dl	Less than 40 mg/dl
Triglycerides:			
0-9 years	Less than 75 mg/dl	75-99 mg/dl	100 mg/dl or greater
10-19 years	Less than 90 mg/dl	90-129 mg/dl	130 mg/dl or greater

Glossary

The various components of a lipid panel are defined below:

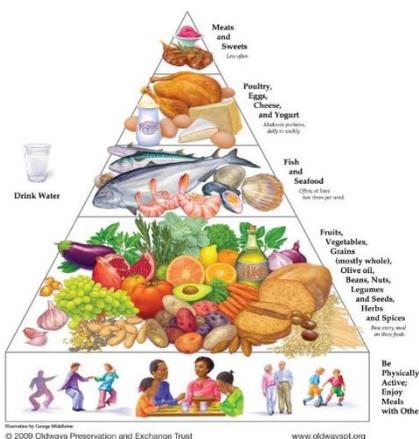
Total Cholesterol: A waxy substance present in animal cells and tissues. Cholesterol may be related to the abnormal thickening and hardening of arteries when too much is present.

LDL Cholesterol: Known as "bad cholesterol" because over time, high blood levels can contribute to atherosclerosis (hardening of the arteries).

HDL Cholesterol: Known as "good cholesterol" because HDL particles serve as scavengers to remove harmful lipid particles out of arteries and return to the liver for disposal.

Triglycerides: Circulating blood fats. Extra calories - including those from sugary foods and drinks - are quickly converted to triglycerides. Because triglycerides are transported to the liver, a high level over time can result in liver disease.

Mediterranean Pyramid



Steps to Improve Blood Lipids

The following lifestyle factors have been shown to improve abnormal blood lipid levels.

Move to a Mediterranean style of eating. The Mediterranean diet has been shown to improve lipid levels and contribute to overall health. This pattern of eating relies heavily on vegetables, fruits, legumes, nuts, seeds, olive oil, whole grains and seafood with more moderate amounts of dairy, eggs and poultry. Meats and sweets are consumed less often.

Increase soluble fiber intake. Foods high in soluble fiber naturally lower cholesterol levels. Good sources include oatmeal, nuts, beans, barley, apples, pears, apricots, blueberries, Brussels sprouts, sweet potatoes, asparagus, oranges, flaxseeds and psyllium fiber.

Select seafood with healthy omega-3 fats. Fish with higher omega-3 content include salmon, lake trout, albacore tuna, and sardines.

Use healthy fats. Examples include olive oil, canola oil, avocado oil, walnut oil and grapeseed oil. Foods naturally high in healthy fats include nuts and seeds, olives, fatty fish and avocados.

Nix the trans fats. Eliminate artificial trans fats from your family's diet. Originally developed to keep foods more shelf stable, these chemically altered fats are the most harmful fats in the food supply. The Food and Drug Administration (FDA) is currently in the process of banning artificial trans fat from the food supply. Until this ban is fully implemented, you will still find them lurking in foods in the form of "**Partially Hydrogenated Vegetable Oils.**" Do not purchase foods that contain partially hydrogenated oils in the list of ingredients.

Limit saturated fats. No more than 10% of total calories should come from saturated fats, found predominantly in full fat dairy products, fatty meats, coconut oil and palm oil. For most children, the range is 17-24 total daily grams of saturated fat. *For specific guidance tailored to your child, please ask for a referral to the Pediatric Associates dietitian.*

Clearing up Cholesterol Confusion. While it seems contradictory, foods that are high in cholesterol such as egg yolks and shrimp have little effect on blood cholesterol when eaten in reasonable amounts.

Exercise! Participating regularly in moderate to vigorous activity increases HDL levels. The goal for children is to accumulate 60 minutes of movement each day through active play, organized activities, or active transportation. In addition to improving cholesterol levels, kids and teens will also experience higher levels of fitness, more energy, enhanced sleep and better overall health!

Supplements – As advised by your pediatrician or registered dietitian

- Plant sterols/stanols – Also known as “plant” cholesterol or phytosterols, these compounds help to lower blood cholesterol. Some foods are fortified (e.g. certain brands of orange juice and spreads) and there are also supplements that can be taken with meals.
- Vitamin D – There is some limited evidence that optimal Vitamin D levels may improve metabolic health, especially in overweight individuals. Many people in the Pacific Northwest have low or borderline levels of vitamin D, so a supplement may be advised.
- Fish oils – There are few studies that have been done with children but fish oils are likely safe in reasonable doses. For lowering triglycerides, the most important fraction is eicosapentaenoic acid (EPA). Look for a supplement with around 800 mg EPA per dose.
- Other supplements – A registered dietitian can assess whether your child’s diet is lacking in other key nutrients. While it is best that children primarily obtain nutrients from food, there are situations when children may benefit from a supplement to fill in nutrient gaps.

Heart-Healthy Sample Menus for a School Aged Child

Day 1	Day 2
<p>Breakfast 1 cup whole grain cereal flakes <i>(look for less than 6 grams sugar/ounce serving)</i> ½ cup blueberries 1 boiled egg or 1 string cheese 1 cup 1% milk</p> <p>Lunch 1 turkey sandwich <i>(Make with 2 slices whole wheat bread, 2 oz. lean turkey, 1 oz. sliced cheese, tomato slices, lettuce leaf and 1 tsp. mayonnaise)</i> 1 cup baby carrots 1 fresh ripe pear, sliced 1 cup 1% milk</p> <p>Afternoon Snack 1/2 cup fresh sweet pepper strips 1 oz. pita chips 1/2 cup hummus Water</p> <p>Dinner 3 ounces grilled salmon 1 cup brown rice 1 cup green beans with finely chopped almonds 1 cup fresh fruit salad Water</p>	<p>Breakfast 2 whole grain toaster waffles 2 tbsp. peanut or almond butter, spread on waffles 1 sliced banana 1 cup 1% milk</p> <p>Lunch 1 cup vegetarian chili 1 oz. whole grain crackers <i>(check label for 1 oz. serving)</i> 1 cup fresh snap peas 1 cup grapes Water</p> <p>Afternoon Snack ½ cup guacamole 1-2 small corn tortillas, cut into wedges <i>(for crispy wedges, spray lightly with oil and bake 5-6 minutes in a 400° oven)</i> Mango fruit Smoothie <i>(blend 1/2 cup frozen mango chunks, ¼ cup 1% milk and ½ cup yogurt)</i></p> <p>Dinner Chicken soft taco <i>(3 oz. cooked chicken chunks, 1 oz. grated cheese, shredded lettuce and tomato chunks on a whole wheat tortilla)</i> ½ cup corn 1 cup yogurt mixed with 1 cup pineapple and peach chunks Water</p>