First of all, what is vitamin D? Why is it important to our health?

Vitamin D is important for keeping our bones healthy and strong. We make vitamin D in our bodies when sunlight touches our skin. To make vitamin D, the body needs a particular range of ultraviolet rays in sunlight. We can also get vitamin D from the foods we eat. In the northern parts of the U.S., in places such as Pittsburgh, the risk for vitamin D deficiency is greater during winter because there isn’t as much vitamin D-producing sunlight. The risk of low vitamin D levels during winter is greater among people with a darker skin color because they have melanin in their skin. Melanin is a natural sunscreen that filters the vitamin D-producing sunlight. A person with darker skin needs more sunlight to make the same amount of vitamin D as a person with light skin. Vitamin D deficiency is also common in children with obesity, as vitamin D is trapped in body fat. Therefore, vitamin D deficiency is common in all children during winter. The risk of vitamin D deficiency is higher in children who have a darker skin complexion and in children who are overweight or obese.

Why is your study important?

Our goal is to have healthy children grow into healthy adults. Childhood obesity is especially associated with risk factors that are harmful to heart health. Such heart-health risks include high blood pressure, high cholesterol levels, artery stiffness, or poor blood vessel health. These heart-health risks can remain throughout childhood and extend into adulthood. Improving the heart-health of obese children can reduce their risk of heart disease later in life.

Low vitamin D levels are common in children with obesity. By itself, vitamin D deficiency is associated with cardiovascular disease risk factors. Therefore, we are trying to see if increasing the vitamin D levels of vitamin D-deficient children with obesity can improve their heart health. In this study, children with obesity and vitamin D deficiency will have their blood vessel health assessed at the beginning of the study and during vitamin D replenishment.

What can children who participate in your study expect?

Parents who think their children fit the study guidelines can call us for more information (contact information is on the back of this page). Parents and health care providers will receive important information about their child’s vitamin D levels at the beginning of the study. At the end of the study, they’ll receive information about their child’s blood sugar after fasting, cholesterol levels, and blood pressure. Enrolled children will take either 600 International Units (IUs), 1,000 IUs, or 2,000 IUs of vitamin D3 once a day for six months. Another benefit of this study is that children will receive treatment if they have low levels of vitamin D.

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One of the biggest challenges to children’s health is being overweight or obese. The U.S. Centers for Disease Control and Prevention (CDC) notes that, in 2012, one-third of children and adolescents were overweight or obese in the U.S. (the CDC reports that obesity is “having excess body fat”). Children who are overweight or obese have a higher risk of developing serious medical issues. These include cardiovascular disease and obesity in adulthood, diabetes, joint problems, and mental illness.
Volunteers Needed for Studies

University of Pittsburgh PRO12100034A: Vitamin D and Vascular Function in Obese Children—Ages 10-17

Researchers at Children's Hospital of Pittsburgh of UPMC are looking for children ages 10-17 to volunteer for a study examining if increasing the vitamin D levels of vitamin D-deficient children who are obese or overweight will improve their cardiovascular health. Participants will be compensated.

University of Pittsburgh 0601143A: Healthy Bodies, Healthy Minds Study—Girls with PCOS

Do you have a daughter between the ages of 9 and 17 who has been diagnosed with polycystic ovary syndrome (PCOS)? If so, she may be eligible to participate in Healthy Bodies, Healthy Minds, a behavioral health intervention that focuses on improving eating, physical activity, and mood. This intervention is provided at no cost, and participants are compensated.

Try these kid-friendly recipes that are high in vitamin D.

Asian Salmon Sticks

Ingredients:
- 24 ounces center-cut salmon fillet, skinned
- 1/4 cup all-purpose flour
- 1/4 teaspoon salt
- 1/4 teaspoon black pepper
- 1 large egg
- 1 tablespoon reduced-sodium soy sauce
- 1 teaspoon sesame oil
- 1/2 teaspoon ground ginger
- 1/4 teaspoon garlic powder
- 1 1/2 cups plain panko bread crumbs

Directions:
1. Preheat oven to 450°F. Generously coat a large baking sheet with nonstick cooking spray and set aside.
2. Place salmon on a cutting board and slice into 3/4-inch by 4-inch strips.
3. Place flour, salt, and pepper in a shallow bowl and stir to combine. In a second bowl, whisk together egg, soy sauce, sesame oil, ginger, and garlic powder until well combined. Place bread crumbs in a third bowl or plate.
4. To bread salmon, coat all sides with flour and shake off excess. Dip in egg mixture and then coat evenly with bread crumbs. Arrange on baking sheet, spray tops of fish with nonstick spray, and bake about seven minutes. Remove from oven, flip fish sticks, spray tops again with nonstick spray, and continue to bake until coating is crispy and fish is cooked through, five to eight additional minutes.

Nutrition Information:
1 serving (2 sticks) provides 240 calories, 11 g fat (2.5 g saturated, 8.5 g unsaturated), 15 g carbohydrate, 20 g protein, 70 mg cholesterol, 270 mg sodium, 215 IU vitamin D.

NOTE: Drinking one cup (8 oz.) nonfat milk with this recipe will increase vitamin D to 345 IU.

Recipe adapted from: http://mealmakeovermoms.com/ by Elaine S. Wahl, MS, RD, LDN, dietitian, MUH Clinical and Translational Research Center

Yogurt Honey Mustard Dipping Sauce

Mix together:
- 3/4 cup Greek yogurt, fortified with vitamin D
- 1/4 cup deli mustard
- 3 tablespoons honey

Nutrition Information:
Makes 8 servings, with one serving providing 45 calories, 0 g fat, 8 g carbohydrate, 2 g protein, 0 mg cholesterol, 85 mg sodium, ~10 IU vitamin D

Recipe adapted from: http://eatingrichly.com/01/healthy-honey-mustard-dip-recipe/ by Elaine S. Wahl, MS, RD, LDN, dietitian, MUH Clinical and Translational Research Center

PARENTS: SIGN UP FOR THE RESEARCH PARTICIPANT REGISTRY
The Research Participant Registry is open to people of all ages. You can sign up for the Registry at participating UPMC outpatient office locations, through MyUPMC, or through the Registry website.
Please go to http://www.researchregistry.pitt.edu/ for more information.