

Kidney Disease and Phosphorus

What is phosphorus, and why is it important?

Phosphorus (or phosphate) is a mineral found in most foods. At the correct level in your body, phosphorus works together with calcium to keep your bones and teeth strong and help your nerves and muscles work properly.

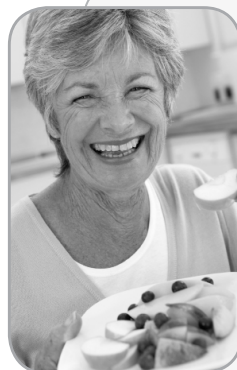
How does kidney disease affect phosphorus?

Healthy kidneys control how much phosphorus from your food is excreted out of your body. In this way, healthy kidneys keep phosphorus at the right level. **Unfortunately, with kidney disease, too much phosphorus can build up in your blood.**

What happens if I have too much phosphorus in my blood?

Too much phosphorus can cause serious problems:

- **Your bones can become weak and easily broken.** To balance out the extra phosphorus, your body makes a special hormone. This hormone causes calcium to be pulled from your bones, so it can bind with the extra phosphorus. With less calcium, your bones are weaker.
- **Hardened deposits can form in your heart, blood vessels, joints, or lungs.** Extra phosphorus can join with calcium to make bony bits (called **calcifications**). Deposited in various areas of your body, these can cause serious health problems.
- **You can have uncomfortable symptoms**, such as red eyes, itchy skin, and painful or stiff joints.
- **Your kidney disease can progress more quickly**, eventually leading to kidney failure.



If you have kidney disease, you'll have regular blood tests for phosphorus levels.

- In **early-stage kidney disease**, it should be **below 4.6 mg/dL**.
- In **advanced kidney disease**, it should be **below 5.5 mg/dL**.

Dialysis removes some phosphorus, but you'll also need to manage your phosphorus through diet and/or medicines.

How can I manage phosphorus?

- **Limit high-phosphorus foods in your diet** (use the table on page 2 to identify low-phosphorus choices).
- **Avoid phosphate-based food additives.** Many packaged foods have additives with phosphorus. Look for “**phosphate**” or “**phosphoric**” in the ingredients list. Examples of packaged foods where you might find added phosphorus:
 - **Cake mixes:** sodium acid pyrophosphate 28, monocalcium phosphate
 - **Colas:** phosphoric acid
 - **Drink mixes and orange juice:** tricalcium phosphate
 - **Packaged or canned meats or shrimp:** tripolyphosphate
 - **Pasta products:** disodium phosphate
- **If directed by your doctor, take an over-the-counter phosphate binder, such as Tums.** Phosphate binders combine with phosphorus while it's in your stomach, so it can't be absorbed into your body.
 - **Take with every meal and snack**, especially with meat/protein, dairy products, or whole grains.
 - **Don't “double-up” if you miss a dose.** Just take the normal amount at the next meal.
 - **Keep your binder handy** — at the dinner table and in a portable pill case for when you eat out.
- **Take other medicines as prescribed.** Your doctor may prescribe medicine to help your body balance phosphorus, calcium, and hormones.

Phosphorus in foods

Category	Very high phosphorus (AVOID these) WHOA!	High phosphorus (Watch portion sizes) SLOW	Low-phosphorus alternatives (Choose these instead) GO!
Dairy and dairy substitutes	<ul style="list-style-type: none"> • Cheese • Chocolate milk • Cottage cheese • Cream • Ice cream • Foods made with milk: cream soups, sauces, etc. • Yogurt or frozen yogurt 	<ul style="list-style-type: none"> • Milk (limit to 1 cup per day) • Soymilk (1 cup) 	<ul style="list-style-type: none"> • Cream cheese (1 ounce) • Nondairy milk substitute or creamer (1 Tbsp) • Sour cream (¼ cup) • Unenriched rice milk (enriched rice milk has phosphate added) • Foods made with unenriched rice milk: cream soups, sauces, etc.
Breads and grains	<ul style="list-style-type: none"> • Bran bread, cereal, or muffins • Quick-cooking rice and pasta (i.e., Minute Rice, Top Ramen, CupNoodles, Easy Mac) 	<ul style="list-style-type: none"> • Bread, crackers, noodles, pasta, or tortillas made with whole wheat flour • Brown rice (½ cup) • Oatmeal (½ cup) • Wheat germ (1 Tbsp) 	<ul style="list-style-type: none"> • Bread, crackers, noodles, pasta, or tortillas <i>made with white flour</i> • Corn or rice cereal, hot cereal such as Cream of Wheat or Cream of Rice • Popcorn (unsalted)
Meats and other proteins	<ul style="list-style-type: none"> • Beans (dried or canned) • Bologna, hot dogs, processed meats • Liver and other organ meats • Nuts and seeds • Peanut butter 	<ul style="list-style-type: none"> • Beef (3 ounces) • Eggs (2 eggs) • Fish (3 ounces) • Poultry (3 ounces) • Pork (3 ounces) 	<div style="border: 1px solid black; border-radius: 15px; padding: 10px;"> <p>Tip: Foods with whole-grain flour are higher in phosphate than foods with white flour, but whole grains are part of a heart-healthy diet. Just limit whole-grain foods to around 4 servings a day.</p> </div>
Sweets and desserts	<ul style="list-style-type: none"> • Chocolate • Cakes, cookies, puddings, or pies made with milk or chocolate • Ice cream 	<p>Cakes, cookies, puddings, or pies made with no milk or chocolate (but can contain nuts) — stick to a small serving</p>	
Drinks	<ul style="list-style-type: none"> • Beer and ale • Cocoa • Colas 		<ul style="list-style-type: none"> • Coffee and tea • Non-cola sodas • Juices and lemonade

What about fruits and vegetables? Fruits and vegetables are low in phosphorus, but often contain potassium. If you have potassium restrictions, see the fact sheet [Kidney Disease and Potassium](#) for more information.



Help from a registered dietitian nutritionist (RDN)

Talk with your doctor about whether or not seeing an RDN would be helpful for you.

A registered dietitian nutritionist can help you create an eating plan based on your diet restrictions and what you like to eat. Help from an RDN may be especially useful if you're on several dietary restrictions.

To learn more and contact an RDN, visit intermountainhealthcare.org/nutrition