

# Proton Pump Inhibitors (PPI):

**Aciphex (rabeprazole), Nexium (esomeprazole), Prevacid (lansoprazole), Prilosec (omeprazole), Protonix (pantoprazole), Kapidex (dexlansoprazole), Zegerid (omeprazole/sodium bicarbonate)**

**What are Proton Pump Inhibitors?** The proton pump is the site within the stomach cell where hydrochloric acid is actually made and pumped out into the stomach. The PPIs, therefore, block the formation of acid in the stomach from 80% to almost 90% if enough of the drug is taken.

**What are they used for?** These drugs are used for almost any condition where stomach acid is causing a problem or tissue injury. These include peptic ulcers in the stomach and duodenum and gastroesophageal reflux disease where acid splashes back into the food pipe and causes injury. PPIs are also used along with antibiotics to cure or eradicate a stomach infection caused by *Helicobacter pylori*. These bacteria have been shown to cause peptic ulcers. Some physicians will use the drug for simple hyperacidity.

**How do I take a PPI?** Follow your physician's instructions carefully. PPIs are usually taken once or twice a day generally 30-60 minutes before a meal. Protonix may be taken with food. Nexium is most effective when taken an hour prior to eating. The Prevacid and Nexium capsules can be opened and the pellets sprinkled on a tablespoon of applesauce or similar food. Do not crush or chew the pellets. The Prilosec capsules should not be opened. Aciphex and Protonix pills should be taken whole. Keep all medications away from children. Never share your medications with anyone else.

**What do I do for a missed dose?** If you miss a dose in the morning but remember in the afternoon, take it for that day. Otherwise, continue the next day as before and don't double up.

**Are there interactions with food or beverages?** There are no known interactions. However, nicotine, caffeine and alcohol can stimulate stomach acid production or delay ulcer healing. Listen to your physician's recommendations.

**Are there interactions with other drugs?** An interaction generally means that one drug may increase or decrease the effect of another drug. Also, the more medications a person takes, the more likely there will be a drug interaction. Interactions with PPIs may occur with the following:

- theophylline (Theo-Dur) -- Prevacid
- sucralfate (Carafate) --- Prevacid
- diazepam (Valium) or similar sedating drugs-- Prilosec, Nexium, Aciphex
- phenytoin (Dilantin) - Prilosec
- blood thinners (Coumadin) - Prilosec

Certain other drugs require stomach acid to be changed into their active form or to be absorbed. Since PPIs eliminates stomach acid so effectively, the absorption of the following drugs may be affected:

- certain iron pills
- ketoconazole (Nizoral)
- ampicillin (Polycillin, Omnipen)
- digoxin (Lanoxin)

If you take any of the above medications, ask your physician. It is okay to take antacids at the same time as PPIs.

**Is there a problem if I have another disorder or disease?** At times, a drug may have a different or enhanced effect when other diseases are present. At other times, the drug may worsen or affect another disease. Check with your physician if you have severe liver or kidney disease. A disease to be concerned about is H. pylori bacteria infection of the stomach. By itself, the drug reduces the number of bacteria in the stomach but does not cure it. It is possible that the use of the drug long-term, while this infection is present, could seriously damage the stomach. There is a simple blood test available to see if you have ever been infected with H. pylori. Ask your physician.

**What about allergies?** People who have known allergies or asthma may be at an increased risk for a reaction from any new medication. Signs of an allergic reaction are skin rash, hives and itching. Of course, a person should be careful about taking one PPI if there has been a previous reaction to another PPI.

**What if I'm pregnant, considering pregnancy or breast-feeding?** Any drug taken during pregnancy is potentially dangerous to a fetus. The FDA has a grading system for each drug which reflects what is known medically. Nexium, Protonix, Prevacid, and Aciphex are ranked B. This means it is not expected to be harmful to an unborn baby. Prilosec is ranked C. This means it is not known whether it will harm the unborn baby. It is unknown if PPIs pass into breast milk. Always consult the physician before taking any drug during or when planning pregnancy or during breast feeding.

**Are there other precautions?** There are only a few precautions. The safety in children has not been established. Persons of Asian descent may need a lower dose. Hospitalized patients on Proton Pump Inhibitors have increased risk of developing pneumonia. In addition, of course, this and all medicines should be stored in a tight container and away from children.

**How long is it safe to take PPIs?** This drug is likely to be safe long-term. However, patients should stay in touch with their physician.

Recent studies show an increased risk of osteoporosis and low magnesium in patients taking Proton Pump Inhibitor likely due to inhibition of absorption by low acid in stomach. Patient should supplement with Calcium + Magnesium 1-2 in mid morning and mid afternoon and take Daily Vitamin D 1000 mg as well. If on PPI chronically, patient should have yearly Magnesium, Calcium and Vit D levels through Primary Doctor and have DEXA bone mineralization study through Primary doctor every 2 years to follow bone density.

Two studies suggest that proton pump inhibitors (PPIs) may increase the risk of chronic kidney disease (CKD). One study showed PPI use was associated with increased risk of CKD compared with no PPI use or with the use of H2RAs. The second study showed increased risk of CKD as well as end stage renal disease. Longer periods of use were associated with progressively higher CKD risk. The mechanism underlying the association between PPIs and risk of CKD is not known, nor is it clear whether decreasing PPI use decreases the risk of CKD. Additional studies are needed to define the

causal relationship between PPI use and the development or worsening of CKD.

A recent study published by JAMA Neurology has confirmed an association between proton pump inhibitors (PPIs) and increased risk for dementia in older patients. Researchers are not clear on how PPI use might raise dementia risk. The highest incidence was noted among those aged 75 to 79 years. This study proved only an association between PPIs and occurrence of dementia and does NOT prove that PPIs cause dementia. There are several alternatives to PPIs, such as histamine H2 receptor antagonists or antacids.

**How about side effects?** Adverse reactions can occur with any drug, even over-the-counter medications. Some of these are mild, such as a stomach upset, which may be avoided by taking the medication with food. Minor reactions may go away on their own but if they persist, contact the physician. For major reactions, the patient should contact the physician immediately. For PPIs, the following are the observed side effects:

**Minor:**

Diarrhea, headache, change in taste, abdominal pain, dizziness, nausea, rash

**Major:**

Severe skin rash --- Nexium and Prilosec

## **Valley Gastroenterology**