



# Your *CYP2C19* Genetic Test Results and What They Mean

*CYP2C19*: Poor Metabolizer #101



# Common differences in the *CYP2C19* gene can affect how you respond to medicines

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We recently tested you for the *CYP2C19* gene. This info sheet explains the test, your results, and what your doctor may do with that information.

Genes are pieces of DNA that provide instructions to make our bodies look and work as they do. Some genes affect the way medicines work in the body. When comparing a group of people, there can be slight differences in each gene's structure. These differences can affect how people respond to medicine.

Some gene differences might make it harder for the body to get rid of some medicines. This means that usual doses of the medicine could give some people unexpected side effects. Some gene differences can cause the body to use up a medicine too fast. This means that normal doses won't work as well and the person may need higher doses. Some gene differences won't let certain medicines work in the body at all. This means a different medicine may work better.

The test we did was for a gene called Cytochrome P450 2C19 (abbreviated *CYP2C19*). This gene makes an enzyme that breaks down, or metabolizes, medicines in the body. Breaking down a medicine can either make it work as intended or make it stop working. It's common to have slight variations in the *CYP2C19* gene that affect how the enzyme works. Depending on these variations, people are considered Poor, Intermediate, Normal, Rapid or Ultra-Rapid Metabolizers.

**Your result puts you in the poor metabolizer group.** In people who are poor metabolizers, the *CYP2C19* enzyme has very little activity. Poor metabolizers break down some medicines very slowly and are likely to need different doses than normal metabolizers or need different medicines. About 3% of our patients are poor metabolizers.

Your doctor can use your test result to choose the medicine most likely to work or to choose the best dose of medicine for you. A number of medicines could be affected. The following are among those broken down by the *CYP2C19* enzyme:

**Antidepressants:** amitriptyline, citalopram, clomipramine, doxepin, escitalopram, imipramine, sertraline, trimipramine

**Others:** clopidogrel (used for clotting), voriconazole (used for fungal infections), some proton pump inhibitors (used to treat stomach ulcers and reduce stomach acid)

The *CYP2C19* enzyme activity can also be affected by some drugs. It is important to tell the doctor all the medicines and supplements you are taking.

Research continues to be done on what medications are affected by genetic test results. For more details about which medicines are broken down by *CYP2C19*, please go to [www.cincinnatichildrens.org/gps](http://www.cincinnatichildrens.org/gps) or [www.pharmgkb.org](http://www.pharmgkb.org). If you have questions about your pharmacogenetic test results from CCHMC, call 513-636-4474 or email [gpsconsult@cchmc.org](mailto:gpsconsult@cchmc.org).

*Questions about individual health concerns or specific treatment options should be discussed with your physician.*

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