

# PHARMACOGENOMICS: WHAT IT MEANS FOR YOUR HEALTH

## WHAT IS PHARMACOGENOMICS?

Pharmacogenomics is the study of how our genes affect the way we respond to different medications. By looking at unique changes in your genetic code, pharmacogenomic testing can predict your risk of developing drug-related side effects and can guide which medication (and dosage) is best suited to you.

## WHY WOULD I BE INTERESTED IN THIS TEST FOR MYSELF OR MY FAMILY?

If you, or anyone in your family, is taking prescription or over the counter medication, pharmacogenomic testing can provide useful information on how effective or safe the medicine will be and can also predict which side effects are more likely to occur. Medications were originally developed with the idea that every drug should work more or less the same for everyone. Increasingly, however, genetics have been shown to play a very important role in influencing our response to certain medications. A "one size fits all" approach therefore doesn't always work. Pharmacogenomic testing can provide your doctor and pharmacist with an important tool to decide which medicines will work best for you, which may be less effective, and which are more likely to cause potentially harmful side effects. Having a pharmacogenomics test done takes away the trial-and-error approach when prescribing medication and allows your doctor to choose the "best-fit" drug from the very beginning.

## WHAT ARE ADVERSE DRUG REACTIONS?

We all have some unique differences in our genes, which means that some medicines might work well for us, while others may not. Some people react badly to certain medications. This is what doctors call an adverse drug reaction (ADR). Adverse drug reactions can range from mild to severe, and can even be life-threatening. When this occurs, the offending medication needs to be identified, stopped, and replaced with a different medication which is safer or better tolerated. Pharmacogenomic testing has been shown to reduce the risk of developing an ADR.

## WHICH OTHER FACTORS COULD AFFECT MY RESPONSE TO A MEDICATION?

Apart from your unique genetic makeup, other factors that can affect how you respond to medication include:

- Age,
- Weight,
- Height,
- Diet,
- Kidney and liver function and
- Other medications being taken.

## WHY IS THIS A USEFUL TEST?

The field of pharmacogenomics has evolved rapidly in recent years and there is now growing evidence to support the benefit of pharmacogenomic testing, especially for patients taking long-term, prescribed medications.

A large study on pharmacogenomic testing was recently completed in Kentucky in the USA. In this study, a group of ±28 000 retired teachers

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were identified (all over the age of 65) who were taking, on average, 12 different medications per day. Of the teachers who received pharmacogenomic testing within this group ( $\pm 5\ 000$ ), 64% required an immediate medication change due to a risk identified for an ADR. Physicians agreed with 94% of the recommended prescription changes based on the pharmacogenomics test results. Some of the other benefits shown for those tested were:

- A 29% decrease in hospitalisation,
- An 18% decrease in pharmacy spend and
- A 24% decrease in slips and falls.

## HOW MANY TIMES DO I HAVE TO DO MY PHARMACOGENOMICS TEST?

Pharmacogenomic testing only needs to be done once in a lifetime as your genetic makeup never changes. You will always be able to refer back to your test results when you need to take a new medication. Your test results can be used as a reference each time that your doctor or pharmacist needs to decide on the most appropriate medication for a particular ailment.

## DO I HAVE TO BE TAKING ANY MEDICATION TO DO THE TEST?

No, the test measures how your genes influence your response to certain medications. It is not affected by the actual medicine you are taking.

## CAN PHARMACOGENOMIC TESTING GUIDE ALL DRUG THERAPIES?

Pharmacogenomics is still an evolving field with many new drug/gene associations being recognised and evaluated on a regular basis. While some medications have well understood genetic predictors, others may still be under investigation, or may not have sufficient evidence available to direct prescribing practices. If you are interested in knowing your genetic profile relating to a specific medication, it is always best to consult your doctor or Ampath pharmacogenomics specialist to make sure that sufficient pharmacogenomic evidence is available for the medication in question.

## WHO SHOULD HAVE THIS TEST?

Any person of any age can benefit from having pharmacogenomic testing done. In elderly patients with chronic disorders, pharmacogenomic testing can help to reduce the number of medication prescribed and reduce unwanted side-effects. Pharmacogenomic testing has also been used in the management of paediatric patients with cancer and rare/complex diseases. Any person on chronic medications such as psychiatric medications, antidepressants, statins or anti-coagulants (to name but a few) could benefit from having this test done.

## WHERE DO I GO TO GET THE PHARMACOGENOMICS TEST DONE?

The test is available at any Ampath care centre in South Africa. You can be referred for the test by your doctor or you can elect to have the test on a self-referred basis. We will either collect one tube of blood or do a cheek (buccal) swab. Either of these samples is sufficient for the test.

## WILL MY MEDICAL AID PAY FOR A PHARMACOGENOMICS TEST?

Many medical aid providers are now covering our pharmacogenomic test, especially for certain indications. However, it is advisable to contact your medical aid directly to enquire whether the test will be covered in your case.

## HOW DO I GET THE RESULTS OF MY PHARMACOGENOMICS TEST?

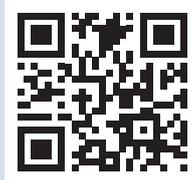
Results are available through our Ampath Patient App. Your results will be available within 4 weeks of your sample being received at our Genetics Laboratory.

## WHO CAN HELP ME INTERPRET MY REPORT?

Should you need help interpreting your test report, you can:

- Speak to your doctor or pharmacist who will be able to advise you on your results.
- Email one of Ampath's pharmacogenomics specialists at [pgx@ampath.co.za](mailto:pgx@ampath.co.za).
- Access additional pharmacogenomics information available on Ampath's website at [ampath.co.za](http://ampath.co.za).

## AMPATH APP



Your test results are available to you through our easy-to-use Ampath App

\*Certain test results require an explanation by your doctor first and will only be available on the App later.  
[ufe.ampath.co.za](http://ufe.ampath.co.za)

