American Association of Psychiatric Pharmacists (aapp.org)

What to Know About Pharmacogenomic Testing

Jeffrey R. Bishop, PharmD, MS, BCPP, FCCP, August 2022

Limitations or considerations of pharmacogenomic tests:

- Remember, there are many reasons why people may respond or react differently to medications. Genetics may be one piece of this puzzle, but other factors like age, gender, liver function, kidney function, drug interactions, body composition, other health conditions, and lifestyle choices may also impact how medications work. Genetics do not determine the results of your treatment, only how they may be impacted.
- Since our genes are inherited from our parents and shared with our biological family members, the results of a pharmacogenomic test may also have relevance to our relatives.
- Pharmacogenomics is also relevant for medications beyond mental health, and some tests only focus on mental health medications.
- Who to test and who may benefit most from testing is not always known.

What is pharmacogenomics?

Pharmacogenomics is the study of how a person's genetics may impact medication outcomes like symptom improvement, common side effects, or rare hypersensitivity reactions. It can provide you and your provider with additional information that may be helpful in developing your optimal treatment plan.

What is pharmacogenomic testing?

A pharmacogenomic test is an assessment of genetic variants that are known or thought to impact how a drug is metabolized by our bodies (pharmacokinetics) or how the drug acts on our bodies (pharmacodynamics). This is a developing area of psychiatric and medical care. There are many clinically validated tests that are available through commercial laboratories or at some large health care institutions. Not all pharmacogenomic tests are the same and not all of them have been proven to be reliable/ useful in making treatment decisions. Pharmacogenomic testing involves the collection of a DNA sample from a patient by blood draw, cheek swab, or saliva sample. The sample is sent to a laboratory that performs the genetic analyses and returns a report of the findings back to the ordering health care provider and/or the patient.

What is included on a pharmacogenomic test result or report?

Most test results include a list of the genes that were examined, your genotypes for each gene (there may be many variants within a gene), and a general description of what the genotype results mean. Sometimes the pharmacogenomic test report provides a list of medications that are affected by the genetic factors assessed by the test. Examples of genotype results include how they may impact your ability to metabolize certain medications (e.g., poor metabolizer, intermediate metabolizer, normal metabolizer, rapid metabolizer, ultrarapid metabolizer), or genes related to the way a medication works (e.g., neurotransmitter receptors or transporters). Some tests group medications into drug-gene interaction categories to highlight whether there are minimal, moderate, or severe interactions that may be important to know.

How might a pharmacogenomic test be useful?

A pharmacogenomic test might help make sense of prior medication experiences, or be useful in making future medication decisions. The test results might add helpful information to inform next treatment choices (e.g., if you and your provider are trying to choose between two medications that may be otherwise be considered "equal", pharmacogenomic information might help choose one over the other. A pharmacogenomic test might help to identify or rule out known genetic factors known to impact medication treatment outcomes.

What information does a pharmacogenomic test NOT provide?

A pharmacogenomic test does not help provide a diagnosis. Additionally, these tests won't tell you whether a medication is absolutely the best one for you, or the single best option for you. Conversely, they may not always identify medications that you should avoid. These tests do not incorporate your current or past experiences with medications, which are important factors to consider when assessing possible benefits or risks from new treatments.

Should I get pharmacogenomic testing and is pharmacogenomic testing part of standard of care?

? Currently, pharmacogenomics is not a part of clinical practice guidelines in mental health. Therefore, there is not established guidance on who should get a test and at what point in care testing might be most helpful. The decision to get a test is one that should be made between you and your provider.

How much does a pharmacogenomic test cost?

The costs may vary by test and insurance may vary depending on your insurance coverage and if you utilize Medicare or Medicaid. Also your coverage may vary depending on the region of the country in which you reside. Out of pocket costs may range from $50-$2000, so it is important to inquire with your insurance and the testing laboratory about the potential costs that you may incur.

What else should I know?

If you are interested in pharmacogenomic testing, talk about it with your provider. Before getting a test, consider why it might be helpful and how will you use or consider the results. . If you get a test report back and a drug that has been working for you for a long time has a drug-gene interaction note or a warning, discuss this with your provider before making any medication changes. Your experience with the medication is very important for making medication decisions. If you get a test and it doesn't say you have any relevant drug-gene interactions to certain medications that haven't worked well for you, it does not necessarily mean that the test is not reliable. Due to the numerous factors that contribute to medication outcomes, the genetic factors assessed by your pharmacogenomic test do not always explain your prior medication experiences. Lastly, it is very important to remember that pharmacogenomic test results should be used to compliment, not replace, a thorough and evidence-based approach to your diagnosis and care.