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Dna testing for medication

Medications work differently in different people. Just as you may have red hair and freckles, but your sibling has brown hair with tanned skin; your genetics also affect how your body process medicines. Common medicines affected by our genetics include mental health medications. It can be exceedingly difficult to predict which mental health medication will work best for you. Genetic testing can help.Every year over forty-three million Americans experience mental illness. While most with a mental illness have only a temporary episode or two, a considerable number experience issues daily. One in every 25 Americans has a serious mental health condition, such as a major depressive disorder. Mental illness is unfortunately more common than most people may think.How Are Psychiatric Disorders Treated?Psychiatric, or mental health, disorders often occur due to a disruption of normal brain function. The original cause can vary individually. Psychiatric disorders may lead to anger, delusions, depression, false beliefs, fatigue, hallucinations, mood swings, and more. It may appear that the person's thoughts are irrational or seem misaligned with reality. Reasoning with someone who is experiencing a mental illness can sometimes be difficult. Treatment is often multifaceted including both cognitive behavior therapy and medications. Examples of psychiatric disorders include:ADHDAnxietyBipolarDepressionEating disordersOCD (obsessive-compulsive disorder)PTSD (post-traumatic stress disorder)SchizophreniaThere are multiple varieties of psychiatric medications. Antidepressants, antipsychotics, anxiolytics, mood stabilizers, and stimulants are all considered psychiatric medicines. Changing the brain's chemistry with medicine may reduce common symptoms. Medicines can effectively reduce mental health symptoms, but they come with their own range of side effects. These drugs may affect blood sugar or cholesterol, cause drowsiness, lead to heart palpitations, or induce muscle spasms, and other unwanted side effects. Comparing risk versus benefit helps your doctor determine the best fit for you.Since there are several mental health medications available on the market, your doctor will begin a process of "trial and error," prescribing various kinds until they find one that works for you. Not only is this process time-consuming, but it also can put you at risk of side effects while still not helping you feel better. There is a solution to help you feel better quickly. Genetic testing for medication effectiveness helps your doctor reduce trial and error, reduces your potential for side effects, increases your chances of controlling your illness, saves time, and saves money.What Is Genetic Testing For Medication Effectiveness?Genetic testing for medication, also known as drug-gene testing, examines your DNA for clues to how your body will respond to certain drugs. Every DNA strand contains genes. Certain genes hold the directions for manufacturing enzymes, a type of protein. These proteins affect drug metabolism. If the enzymes act differently than expected, the drug may break down before it has a chance to work, or the medicine may stay in your system longer than necessary. If the medication cannot function properly, you may have more side effects with little to no benefit. Knowing how your genes work takes the guesswork out of prescribing the best potential medicine.Genetic testing for drug metabolism focuses on a specific type of enzyme: cytochrome P450 (CYP450). These enzymes are responsible for the metabolism of over 70% of clinically used drugs, including most psychiatric meds. Ready to finally find the right medication? Compare Tests How Does Genetic Medication Testing Work?The genetic testing process is both quick and simple. A saliva sample collected with a swab of your cheek. The test can be done in the comfort of your own home. The sample is then sent back to the laboratory for analysis. Once ClarityX receives collected the genetic swab test for medication, the team analyzes it and gives insight into your body's response to hundreds of FDA-approved medications. Information learned from your genetic swab test includes:Finding the right medication based on your DNA.Whether you have an increased risk for unwanted side effects.Whether you need a dosage adjustment.How a new medication will react to your current medications.The purpose of genetic testing for medication is to help you and your physician make better treatment choices for your overall health, happiness, and wellness.Do I Need A Genetic Swab Test for Medication?Anyone that uses psychiatric medications, or certain other types of medicine, should consider getting a DNA swab test for medication response. Drug gene testing is especially important if any of the following applies to you:You have recently been diagnosed with a health condition or started a new drug treatment. Genetic testing can narrow down options and eliminate potentially dangerous drugs.You are using other medications: Two different medications can clash with each other and cause side effects. Testing can help predict these reactions and reduce the risk of conflicting medications.Your current medication is not working for you. If you are already experiencing drug side effects, it may be time to switch your medication. Genetic testing can help you find the best medication based on your DNA.Give genetic testing a chance to help you feel better. Our team at ClarityX is here to help. After a quickDNA swab test for medication, you will receive a comprehensive report with valuable information regarding your response to potential medicines. The Mindwell test at ClarityX carefully looks at your response to 130+ FDA approved mental health medications. Contact ClarityX for better control of your health. The GeneSight Psychotropic test is designed to analyze clinically important genetic variations that may impact how your patients metabolize and respond to certain mental health medications. These pharmacogenetic insights can provide critical information to inform treatment plans and may help shorten your patients' road to wellness. Take the next step Require dose adjustments Be less likely to work Have increased risk of side effects The GeneSight Psychotropic report may help you avoid multiple medication trials by providing information about which medications may require dose adjustments, be less likely to work, or have an increased risk of side effects based on your patient's genetic information. The report also includes information on how a patient's smoking status may affect their body's metabolism of certain medications. Learn more An ideal time to consider the GeneSight test is when treating: New patients with a previous medication failure Patients experiencing lower-than-desired medication response Patients experiencing unwanted side effects Elderly patients Patients with liver damage Our goal is to make the GeneSight test affordable and accessible to patients. Insurance can be complicated, and we want you to feel comfortable ordering the test for your patients. Cost shouldn't be a barrier to getting critical insights for informing mental health treatment. of patients pay $330 or less for their GeneSight test* is the typical out-of-pocket cost for patients on Medicare (Part B) and Medicaid And if your patient's cost is estimated to be more than $330, we'll contact your patient to discuss their options, including financial assistance and interest-free payment plans for those who qualify. * Based on a review of six months of past claim data for major insurance carriers across the US. Last updated 2023. Tens of thousands of clinicians have ordered the GeneSight test for 3 million patients and counting. Explore what happens when the GeneSight test becomes part of a clinician's practice through the testimonials shared below. Read more Read more Read more Hear from other healthcare providers The stories shared on this page are individual healthcare providers' personal experiences with GeneSight. Others may not have the same experience or outcome. Do not make any changes to your current medications or dosing without consulting your healthcare provider. The GeneSight Psychotropic test analyzes how your genes may affect your outcomes with medications commonly prescribed to treat depression, anxiety, ADHD, and other mental health conditions. The GeneSight Psychotropic test provides your clinician with information about which medications may require dose adjustments, may be less likely to work for you or may have an increased risk of side effects based on your genetic makeup. View sample Psychotropic report The GeneSight MTHFR test shows whether a person has variation in MTHFR, an enzyme required to convert folic acid and dietary folate into its active form, L-methylfolate See the GeneSight process Step 1 Your provider collects a DNA sample by painlessly swabbing the inside of your cheek OR you can collect the sample at home using our patient collection kit. Step 2 The sample is sent to our lab for analysis. Step 3 After we receive your sample, your healthcare provider will typically get test results in about 2 days. Step 4 Your provider can contact our Medical Affairs team for a consultation. Your provider can then review the results with you on your next visit. The GeneSight test report may help you avoid multiple medication trials by providing information about which medications may require dose adjustments, be less likely to work, or have an increased risk of side effects based on your genetic information. The report also includes information on how a patient's smoking status may affect their body's metabolism of certain medications. Pharmacokinetic genes tell us what the body does to the medication. These genes provide information on how a patient may break down certain medications CYP2D6 CYP3A4 CYP2B6 UGT1A4 CYP2C19 CES1A1 CYP1A2 UGT2B15 CYP2C9 Pharmacodynamic genes tell us what the medication does to the body. These genes provide information on likelihood of response and/or risk of side effects for certain medications. SLC6A4 HLA-A*3101 ADRA2A HTR2A HLA-B*1502 These genotypes are included on the report for informational purposes only. Our Find a Provider tool includes clinicians who are registered to offer the GeneSight test and have indicated they are now accepting new patients. Simply fill out a form to gain access to the Find a Provider tool and it will search for clinicians near you. Pharmacogenetic testing helps identify the best medications for patients based on their unique genetic makeup. This testing reduces trial and error with psychiatric medications Testing can lead to reduced side effects and a faster response in depression treatment. The treatment of clinical depression presents unique challenges, with many patients voicing concerns that echo a disheartening struggle: "I have tried every medication for depression, and nothing works." Or, "I cannot tolerate the side effects of any antidepressants." Such sentiments underscore the acute need for more tailored therapeutic strategies in mental health care. Depression is a deeply debilitating disorder that affects over 21 million American adults annually. The repercussions are severe, leading to an astonishing loss of approximately 200 million workdays and inflicting an economic burden of approximately $20 billion each year. Beyond these stark statistics, the human cost is even more alarming. Depression profoundly erodes the quality of life, severely strains personal relationships, and, in severe cases, can culminate in suicide. Regarding the need for personalized treatment approaches in mental health, consider a parallel with another medical specialty. Imagine seeking treatment for a swollen, painful knee. How would an orthopedist ensure that treatment effectively addresses the underlying cause? Typically, before suggesting surgery, they would perform a comprehensive assessment, including a physical exam, blood tests, and imaging. Why should psychiatric treatment be any different? Just as we would not rush to surgery for a swollen knee without thorough diagnostics, prescribing antidepressants without a comprehensive understanding of a patient's genetic profile seems increasingly outdated. Pharmacogenetic testing offers critical data, guiding the selection of treatment strategies with precision. The last decade has seen transformative advancements in psychiatric pharmacogenetics, thus potentially revolutionizing psychiatric care. Dr. Seema Patel, PharmD, BCPP, a medical science liaison at Genomind, elucidates the profound effect of this testing: "The way that pharmacogenetic testing can help you with your medications is being able to identify based on your unique genetics how you might respond to certain medications and what the risk of side effects would be with certain medications" (S. Patel, personal communication, March 24, 2024). The Mechanics and Merits of Pharmacogenetic Testing Pharmacogenetic testing is easily administered through a cheek swab in a clinical setting or at home. Many commercial insurance plans and Medicare now cover this. The concept is both simple and profoundly effective: by examining how individual genetic profiles influence drug metabolism and response, this testing pinpoints which class of antidepressants, such as SSRIs or SNRIs, are likely to be most effective for an individual. In addition, it can determine which specific medications are least likely to cause side effects. Pharmacogenetic testing is also insightful about how non-pharmaceutical interventions, such as dietary supplements like l-methylfolate or magnesium, might benefit patients. The test even offers personalized insight into the benefits of exercise for mental health based on patients' genetic variants. Scientific Validation of Pharmacogenetic Testing The promise of pharmacogenetic testing extends beyond the theoretical realm, with robust research substantiating its efficacy. Dr. Patel cited a meta-analysis by Bousman and colleagues (2019) that indicated patients receiving pharmacogenetic-guided treatment exhibited a 70 percent higher probability of achieving remission when compared with those treated under standard care protocols. This supports earlier findings by Rosenblat and colleagues (2018), whose research demonstrated significantly enhanced response and remission rates in the treatment of depression when treatment was informed by genetic testing. Take our Depression Test Find a therapist to overcome depression or anxiety Further, Dr. Patel referenced a study by Swen and colleagues (2023), which found that pharmacogenetic-guided care reduced the risk of adverse drug reactions by 30 percent compared to traditional methods. Another compelling study by David and colleagues (2021) indicated that pharmacogenetic-guided patients were 50 percent less likely to be hospitalized than those under standard care. The Future of Pharmacogenetic Testing in Psychiatry: A Holistic and Personalized Approach It is crucial to note that while pharmacogenetic testing is a powerful tool, it should not be the sole basis for psychiatric treatment decisions. It is a component of a multifaceted approach that includes comprehensive clinical evaluations and ongoing patient monitoring. As research continues to advance and more psychiatrists adopt this technology, the hope is that fewer patients will have to endure the often debilitating journey through ineffective treatments. Pharmacogenetic testing promises a deeper understanding of individual responses to psychiatric medications but also paves the way for more personalized, effective mental health treatment. References Bousman, C. A., Arandjelovic, K., Mancuso, S. G., Eyre, H. A., & Dunlop, B. W. (2019). Pharmacogenetic tests and depressive symptom remission: a meta-analysis of randomized controlled trials. Pharmacogenomics, 20(1), 37–47. 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Lancet (London, England), 401(10374), 347–356. 22)01841-4 Find a Medication Management Therapist Get the help you need from a therapist near you–a FREE service from Psychology Today. Atlanta, GA Austin, TX Baltimore, MD Boston, MA Brooklyn, NY Charlotte, NC Chicago, IL Columbus, OH Dallas, TX Denver, CO Detroit, MI Houston, TX Indianapolis, IN Jacksonville, FL Las Vegas, NV Los Angeles, CA Louisville, KY Memphis, TN Miami, FL Milwaukee, WI Minneapolis, MN Nashville, TN New York, NY Oakland, CA Omaha, NE Philadelphia, PA Phoenix, AZ Pittsburgh, PA Portland, OR Raleigh, NC Sacramento, CA Saint Louis, MO San Antonio, TX San Diego, CA San Francisco, CA San Jose, CA Seattle, WA Tucson, AZ Washington, DC More from Lori Plutchik, M.D. More from Psychology Today Pharmacogenomic (PGx) testing for Veterans uses people's genes to understand how they respond to medicines. Genes are parts of our DNA that provide instruction on how your body develops and functions. Everyone has small differences in their genes so people may respond different to medicines. Pharmacogenomic (PGx) testing uses your genes to understand how your body responds to different medications. This can help your provider find a medicine or dose better suited for you. This may speed up your treatment and decrease side effects. Knowing about how your genes affect medicines can help your health care team:Decide which medicines and doses may work better for youHelp avoid side effects caused by medicinesLess time and money spent trying different medicationsTest results are kept in your medical record forever so all your health care providers can use them for future prescribing The test requires one tube of blood. Results take 10-20 days to come back. You and your healthcare provider will each get a written copy.Your provider will discuss and answer your questions about:What the PGx test results may findBenefits, limitations and risks Genetics only tells us part of the story. Other things like age, overall health, organ function and other medicines you take also affect how you respond to medicines. The VA PGx test does not test for all genes, but only certain genes that we know affect selected medicines. There may be other medicines you are taking that are affected by genes that we do not test for. The risk is low, like other tests that require blood draws. The test may reveal heritable implications, if you have any. Your provider will let you know if that is the case. Your PGx test results will be kept confidential within the VA and will only be shared with your permission or if there is a court order. Your results show each gene tested by gene name. The type of gene you have is described in 2 ways – the genotype and phenotype – both describe the type of differences in genes that were found by the test. Many of the genes tested describe how your body processes medicines. For example, rapid metabolizers process some medicines quickly. Poor metabolizers may not process some medicines well.Remember, not all genes tested affect your medicines you are currently prescribed. Similarly, not all of your medicines are affected by the genes tested. Please talk to your provider or pharmacist about how your test results apply to your medicines. PGx test results do not change overtime. However, new information may change how the results are used. Scientists are still working to find other genes that are important for medicine response. You may be tested for new genes discovered in the future. Your test results only tell us part of the story. Other things like age, overall health, organ function and other medicines you take also affect how your body responds to medicines. Your provider will use all these factors to prescribe the most appropriate medicines and doses for you. PGx test results can be complex. Talk to your provider about questions or concerns for the most correct information. If you see more than one provider, please share your test results with your other providers. This is especially helpful if a different provider starts a new medicine for you, or if you see a provider outside the VA. Michelle Nguyen PharmD Pharmacogenomics pharmacist Lovell Federal health care Phone: Email: michelle.nguyen8@va.gov Marshall Lee PharmD Clinical pharmacy specialist Lovell Federal health care Phone: Email: marshall.lee5@va.gov The saying "if it seems too good to be true, it likely is" applies to so many things in life. As the director of the Clinical Pharmacogenomics Service at Boston Children's Hospital, I spend a significant amount of time discussing what pharmacogenomics testing cannot tell us. I am sure you are wondering why I would take a negative approach instead of touting the miracles of pharmacogenomics testing, since after all, that is my job. Well, as with many things, it is complicated. Pharmacogenomics can potentially guide drug choices Pharmacogenomics is the study of gene expression on the ability to metabolize or break down medications. The term "gene expression" is important because we're talking about how much your genes influence your response to a medication. Much like the director of a play or movie, your genes give instructions to other parts of your body. One of the things your genes direct is the production of enzymes required to break down (or "metabolize") the drugs you take. These enzymes influence how effective a drug might be for you and how likely you are to experience negative side effects. Your unique combination of genes is called your genotype. Your genotype can tell us if you will make more or significantly less enzyme than other people. These enzymes help break down the medications into substances that can be more easily excreted by the body. However, in some cases these substances can be active and some are even harmful before they are excreted. This partially explains why some people will get no effect at all while others end up in the hospital with severe side effects from the same medication at the same dose. Many factors affect how you metabolize medications, including your age, gender, diet, whether or not you smoke, whether or not you are pregnant, your other medical problems, and very importantly, the other medications you are taking (including over-the-counter medications and herbal supplements). I often use the analogy of a pie to describe the effect of genetics on a medication's metabolism. In some cases, your genetics makes up a very large part of the pie — up to 90% for some medications. In other cases, your genetics are only a tiny sliver of the pie and the other factors make up the largest amount. Using pharmacogenomics wisely is key to its usefulness The key to applying pharmacogenomics is knowing when to test and how to apply the results. There are several situations where genetic testing before starting a medication is standard of care today. When there is a well-understood drug-gene interaction, knowing the genotype before starting treatment can avoid dangerous side effects. An example of this is a medication for the treatment of inflammatory bowel disease that, if metabolized slowly, can lead to a severely depressed immune system and life-threatening infections. In other cases, knowing that a patient will not respond to a therapy can save precious time and protect quality of life, such as for certain cystic fibrosis and cancer medications. As always, the goal is to match the right drug to the right patient to achieve the greatest benefit with minimal side effects. Pharmacogenomic testing can be informative and can help caregivers and patients make safer decisions when choosing medications. However, promoting pharmacogenomic testing with application to only one disease state or with questionable testing practices can cause more harm than good. Most genes influence how the body metabolizes not just one class of medications, but can influence many other drug classes as well, and to different degrees. Focusing only on one condition, such as ADHD, and ignoring the influence that genotype may have on other drug classes, such as medications for heart disease, can actually result in patient harm. Overstating the impact of the genotype on the person's ability to metabolize medications can also cause serious anxiety. Patients have reported feeling scared to take any medications, even when they know that their condition will not likely get better without treatment. And this is why during each visit, we spend a significant amount of time discussing what pharmacogenomics cannot tell us. And then we talk about whether testing might make sense. For patients who have had a long history of serious side effects from various medications or failure to respond to medication, testing can help explain what has gone on in the past as well as help guide future decisions. In one memorable case, the patient was extremely grateful for results that explained why she had experienced debilitating insomnia while on fluoxetine. She told us that previous healthcare providers had told her it was "all in her head" when actually it was her inability to metabolize the drug at standard doses. For others, results predicting and thus avoiding life-threatening reactions to anti-epileptic drugs help design a more appropriate regimen for seizure control. While the science of pharmacogenomics has been around for a hundred years, we are still at just the tip of the iceberg in understanding that information and using it to improve the lives of patients. There has been an explosion of knowledge over the past 10 years and we learn new things every day. It is an exciting time to be studying pharmacogenomics! As a service to our readers, Harvard Health Publishing provides access to our library of archived content. Please note the date of last review or update on all articles. No content on this site, regardless of date, should ever be used as a substitute for direct medical advice from your doctor or other qualified clinician.