Can a genetic test help predict which antidepressant will be most effective?

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Depression is the most commonly diagnosed mental illness, and antidepressants are the most frequently prescribed treatments for it. But with dozens of medications to choose from, and with individuals responding better to some drugs than to others—possibly due to genetic differences that affect how the medications are metabolized and how they act on the brain—patients must often try several medications before finding one that is most effective.

"It's a lot of trial and error even for those of us who are experts, and most antidepressants are prescribed by primary care physicians, not psychiatrists," said UMass Medical School psychiatrist Anthony Rothschild, MD, the Irving S. and Betty Brudnick Chair in Psychiatry, professor of psychiatry and director of the Center for Psychopharmacologic Research and Treatment at UMMS.

Dr. Rothschild, a renowned authority on depression treatment and psychopharmacology, is an investigator for a new clinical trial to determine if a test of an individual patient's genes to predict which antidepressants will work best will improve prescribing decisions and patient outcomes.

"The question the GeneSight trial seeks to answer is will it add value to prescribing decisions and outcomes for patients with moderate depression who either need to go on or change medication," said Rothschild.

Manufactured by Assurex, the GeneSight Psychotropic test examines a patient's genes to analyze how they may affect his/her metabolism and response to FDA-approved medicines commonly prescribed to treat depression.

GeneSight collects a saliva sample with a quick, noninvasive cheek swab that is sent for laboratory analysis. The test looks at eight genes involved with metabolizing drugs and with serotonin, a brain chemical often associated with depressive illness.

"Some individuals metabolize medications rather quickly so they end up with not enough medication in their body; others metabolize slowly so they end up with too much," said Rothschild. "And if serotonin regulation and transport is normal, antidepressants that are selective serotonin reuptake inhibitors, or SSRIs, are probably not likely to be effective."

Based on an individual patient's results, GeneSight categorizes over three dozen antidepressant and antipsychotic drugs, including all the SSRIs, as "green"—medications may be used as directed; "yellow"—use medications with caution; or "red"—use medications with increased caution and more frequent monitoring.

"For half the patients, I will be guided to strongly consider the green light medicines identified by the test; for the other half I will not use the test, just my own judgment, to prescribe for the first 12 weeks," Rothschild explained.

"After 12 weeks, whether the person is better or not, I will share with them the results of the test. If they're better, fine. If they're not better and I haven't been using the test, I will use it. Or if I was using the test and they're not better, I will consider another green light medicine for them to try."

It's easy and low-risk for patients, who get treatment either way.

Acknowledging that these classifications still leave the specific choice of medication to the prescriber, Rothschild said, "The gene test can potentially guide us. The field has been searching for something like this, especially for primary care providers."

Provided by University of Massachusetts Medical School

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