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## Caution on pharmacogenetic testing

The general public may have been led to believe that by decoding genes into their constituent parts, clinicians can prevent or predict serious illnesses and personalize treatment. While this may be true in some areas of medicine, such as oncology, using a pharmacogenetic testing-based "lookup table" to prescribe psychiatric medications is disturbing. This practice could lead to incorrect prescriptions, as well as a lack of follow-up or appropriate dosage titration or medication switching. These problems could put a patient's life at risk and, consequently, bring the field of psychiatry into disrepute.

In the last few years, using pharmacogenetics to predict or prevent illness and personalize treatment has become very attractive. A 2019 meta-analysis of 5 randomized controlled trials examined the use of pharmacogenetic-guided decision support tools for major depressive disorder (MDD). Researchers randomized 1,737 participants with MDD to either pharmacogenetic-guided decision support tools or treatment as usual.[1] Patients were assessed using the Hamilton Depression Rating Scale–17 three times over 8 weeks. Compared with those who received treatment as usual, those who were managed using pharmacogenetic-guided decision support tools were more likely to achieve remission from depressive symptoms (relative risk = 1.71; 95% CI, 1.17 to 2.48; $P$ = .005). However, these results are controversial because the included studies were industry-funded, and proprietary algorithms were used to interpret the results. (Editor's note: For more information about this study and pharmacogenetic testing, see "Pharmacogenomics testing: What the FDA says," Savvy Psychopharmacology, Current Psychiatry. April 2019, p. 29-33.)

In a policy statement on the use of pharmacogenetic testing in psychiatry, the International Society of Psychiatric Genetics (ISPG) explained that such testing should be viewed as a decision support tool to assist in implementing good clinical care, rather than as an alternative to standard protocols.[2] Furthermore, the ISPG stated that "common genetic variants are not sufficient to cause psychiatric disorders such as depression, bipolar disorder, substance dependence, or schizophrenia."[2]

Some manufacturers have claimed that their pharmacogenetic tests can provide information on how a patient will respond to medications for treating depression and other conditions, and when a clinician can or should change a patient's medication. However, the relationship between DNA variations and the effectiveness of antidepressant medications has not been established, and basing clinical decisions on the results of these tests may lead to inappropriate medication changes.

Pharmacogenetic tests are being advertised to both clinicians and patients, but the FDA has not approved the use of any test for providing information on a patient's ability to respond to any specific medication.[3] Therefore, psychiatrists should discuss the use of pharmacogenetic testing with their patients, and advise patients to avoid stopping or changing their medications based on the results of any pharmacogenetic test. Clinicians should not change a patient's medication regimen solely based on the results of pharmacogenetic testing. These tests are not supported by scientific or clinical evidence, and using these tests for clinical decisions may put the patient at risk for potentially serious health consequences.

**Aneela Jafri, MD, MS**
Research Volunteer
Ocean Medical Center
Nutley, New Jersey

**Ramon Solhkhah, MD**
Founding Chair and Professor
Department of Psychiatry
and Behavioral Health
Hackensack Meridian School of Medicine
at Seton Hall University
Nutley, New Jersey
Chair
Department of Psychiatry
Jersey Shore University Medical Center
Neptune, New Jersey
Residency Training Director
General Psychiatry
Ocean Medical Center
Brick, New Jersey

**Keep in touch!**

**letters@currentpsychiatry.com**

**OR**

**Comments & Controversies**
Current Psychiatry
7 Century Drive, Suite 302
Parsippany, NJ 07054

All letters are subject to editing.

**Stacy Doumas, MD**
Vice Chair
Associate Professor
Department of Psychiatry and Behavioral Health
Hackensack Meridian School of Medicine at Seton Hall University
Nutley, New Jersey
Vice Chair for Education & Research
Residency Training Director
General Psychiatry
Jersey Shore University Medical Center
Neptune, New Jersey

**Saba Afzal, MD**
Assistant Professor
Department of Psychiatry and Behavioral Health
Hackensack Meridian School of Medicine at Seton Hall University
Nutley, New Jersey
Associate Residency Training Director
General Psychiatry
Ocean Medical Center
Brick, New Jersey

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