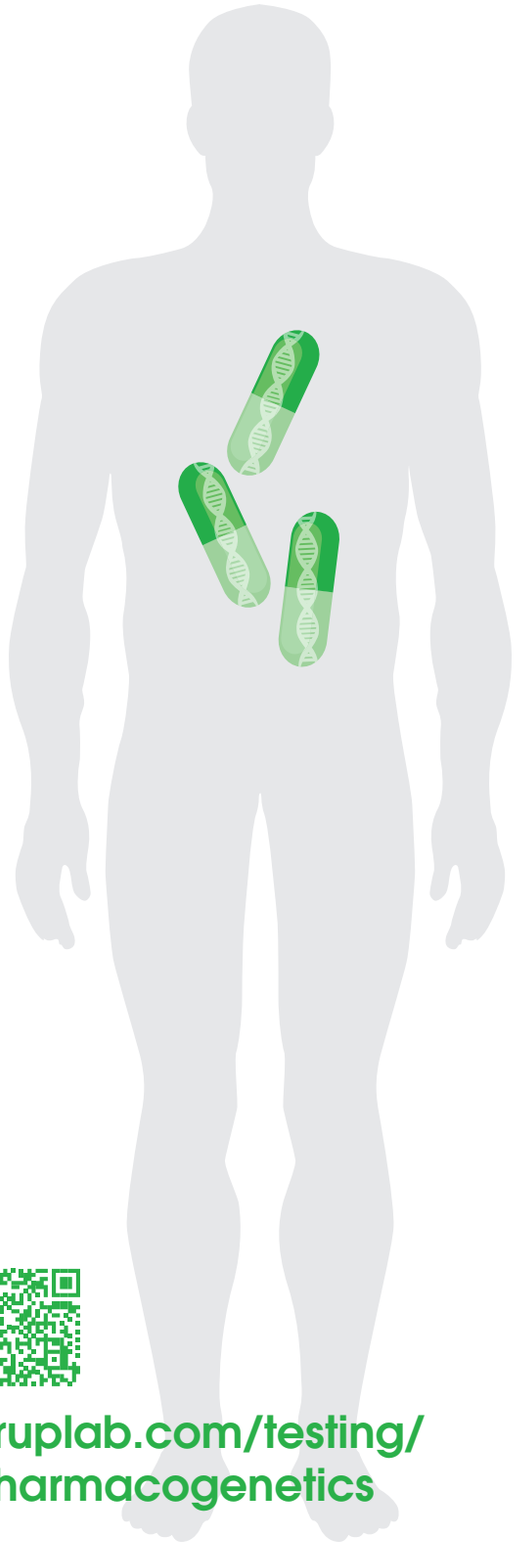

aruplab.com/testing/pharmacogenetics

References

1. Agency for Healthcare Research and Quality. Reducing and preventing adverse drug events to decrease hospital costs. archive.ahrq.gov/research/findings/factsheets/errors-safety/aderia/ade.html (accessed August 25, 2016).

ARUP LABORATORIES

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keyword: Pharmacogenetics

A nonprofit enterprise of the University of Utah and its Department of Pathology

BD-CS-041, Rev 4, December 2022

Pharmacogenetics

testing at ARUP Laboratories

ARUP LABORATORIES

According to the U.S. Department of Health and Human Services, more than **770,000 injuries and deaths due to drug reactions occur each year in the United States. These events may cost a hospital up to $5.6 million yearly.** This number does not include the adverse drug events that cause hospital admissions, malpractice and litigation costs, or the costs associated with patient injuries.[1] Pharmacogenetic testing provides opportunities to lower the number of deaths and injuries related to drug reactions.

Pharmacogenetic testing can help save lives and money.

- Prevents many adverse drug events before they occur
- Reduces pharmacy costs by optimizing dosage
- Decreases number of patient hospitalizations
- Improves patient compliance with their drug therapies
- Becomes a part of a patient's medical record, so it can be referenced in future medical situations when medication metabolized by the same pathway is prescribed

PM

poor metabolizer: two nonfunctional alleles, little or no drug metabolism

IM

intermediate metabolizer: one functional and one nonfunctional allele, decreased drug metabolism

EM

extensive metabolizer: two functional alleles, normal drug metabolism

UM

ultra-rapid metabolizer: duplication of functional alleles, increased rate and thoroughness of drug metabolism

ARUP TEST CODE AND NAME		ORDERING RECOMMENDATIONS
3001524	Cytochrome P450 Genotyping Panel	Use to assess genetic risk of abnormal drug metabolism for drugs metabolized by *CYP2B6, CYP2C19, CYP2C8, CYP2C9, CYP2D6, CYP3A4, and CYP3A5*. May aid in drug selection and dose planning for many drugs. This test includes an enhanced report that provides the genotype of the patient and the result interpretation signed off by medical directors. It also provides a medication summary, which indicates the medications the clinician should avoid with the patient, the medications that could work with some dosage adjustment, and the drugs that are most likely to work according to the genotype. The report is created in conjunction with Coriell Life Sciences; all results are cited.
3004471	Pharmacogenetics Panel: Psychotropics	Use to assess genetic risk of abnormal metabolism for drugs such as psychostimulants, antidepressants, antipsychotics, and many other drugs that are metabolized by *ANKK1, COMT, CYP2B6, CYP2C19, CYP2C9, CYP2D6, CYP3A4, CYP3A5, DRD2, GRIK4, HTR2A, HTR2C, MTHFR, OPRM1,* and *UGT2B15*. May aid in drug selection and dose planning for many drugs.
3001513	*CYP2D6*	Use to assess genetic risk of abnormal drug metabolism for drugs metabolized by *CYP2D6*.
3001501	*CYP2C8* and *CYP2C9*	Use to assess genetic risk of abnormal drug metabolism for drugs metabolized by *CYP2C9*.
3001508	*CYP2C19*	Use to assess genetic risk of abnormal drug metabolism for drugs metabolized by *CYP2C19*.
3001518	*CYP3A4* and *CYP3A5*	Use to assess genetic risk of abnormal drug metabolism for drugs metabolized by *CYP3A5*. All individual *CYP* tests are included in the panel.
2012166	Dihydropyrimidine Dehydrogenase (*DPYD*), 3 Variants	Predicts the risk of dose-related toxicity to 5-Fluorouracil (5-FU), which is the most frequently used chemotherapeutic drug for the treatment of many types of cancer.
3001535	*TPMT* and *NUDT15*	Use to assess genetic risk for severe myelosuppression with standard dosing of thiopurine drugs.
3001541	Warfarin Sensitivity (*CYP2C9, CYP2C cluster, CYP4F2, VKORC1*) Genotyping	Identifies individuals with inherited variants that affect metabolism and/or sensitivity to Warfarin.
0051684	Glucose-6-Phosphate Dehydrogenase (*G6PD*) 2 Mutations	Preferred genetic test for individuals of African descent. Detects the single most common pathogenic *G6PD* mutation (the A- allele) in individuals of African descent.
3004457	Glucose-6-Phosphate Dehydrogenase Deficiency (*G6PD*) Sequencing	Preferred test to detect glucose-6-phosphate dehydrogenase *(G6PD)* variants in females or any individual with reduced *G6PD* enzyme activity.
2002429	HLA-B*57:01 for Abacavir Sensitivity	Standard of care prior to treatment with abacavir therapy in HIV-positive patients. Reactions to this drug can get worse with each dose and can be fatal.
2012049	HLA-B*15:02 Genotyping, Carbamazepine Hypersensitivity	Identifies patients who may be at risk for Stevens-Johnson syndrome or toxic epidermal necrolysis prior to treatment with carbamazepine. Recommended for patients not currently taking carbamazepine.
2008767	Opioid Receptor, Mu 1 (*OPRM1*) Genotyping, 1 Variant	Used for pretheraputic identification of individuals who may require higher or lower doses of opioid drugs to achieve adequate pain control or those who may respond better to naltrexone for the treatment of alcohol and/or opioid dependency.
2008426	*SLCO1B1*, 1 Variant	Identifies individuals at increased risk for statin-related muscle toxicity.
0051332	UDP Glucuronosyltransferase 1A1 (*UGT1A1*) Genotyping	May be useful in dosage planning for individuals who will receive high-dose irinotecan, have a history of irinotecan sensitivity, or experience neutropenia while receiving irinotecan.

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