Conclusions

Major genetic changes in a patient's genome can be associated with poor metabolism of certain medications. With a standard dose, poor metabolizers may have increased levels of unmetabolized medication in their bloodstream. On the other hand, genetic changes may also be associated with ultra-rapid metabolism of certain medications. Ultra-rapid metabolizers may metabolize medications too quickly to provide a therapeutic effect at a standard dosage.
For example, when treating H. pylori infections associated with peptic ulcer disease, a poor metabolizer may have the best success with a lower dosage of proton-pump inhibitors, while an ultra-rapid metabolizer may have better success with a higher dose of proton-pump inhibitors.

GASTROENTEROLOGICAL DISEASES, DRUG, AND ASSOCIATED METABOLIC ENZYME

DISEASE	ENZYME	DRUG
Peptic Ulcer	CYP2C19	Proton Pump Inhibitors
Nausea and Vomiting associated with Chemotherapy and Postoperative States	CYP2D6	Type 3 Serotonin Receptor (5HT3) Antagonists

THE MOST IMPORTANT GENES, VARIANTS, AND THEIR EFFECTS ON THE ENZYMATIC ACTIVITIES INVOLVED IN PHARMACOLOGICAL TREATMENT OF GASTROENTEROLOGICAL DISEASES.

GENE	POLYMORPHISM	EFFECT	CONSEQUENCES
CYP2C19	SNPs-Alleles: *2, *3, *4, *6	Decrease activity	Poor metabolizers
	SNPs-Alleles: *17	Increase activity	Ultrarapid metabolizers
CYP2D6	SNPs: More than 50 alleles	Different activity levels	Poor to ultrarapid metabolizers

PLEASE CALL OR SEND US AN EMAIL TODAY FOR MORE INFORMATION AND TO ORDER SAMPLE TEST KITS.

References
1. https://www.fda.gov/news-events/press-announcements/fda-announces-collaborative-review-scientific-evidence-support-associations-between-genetic
2. (Ingelman-Sundberg, M., & Rodriguez-Antona, C. (2005). Pharmacogenetics of drug-metabolizing enzymes: implications for a safer and more effective drug therapy. Philosophical transactions of the Royal Society of London. Series B, Biological sciences, 360(1460), 1563–1570. https://doi.org/10.1098/rstb.2005.1685

GENESYS Diagnostics INC.

CAP ACCREDITED COLLEGE of AMERICAN PATHOLOGISTS

Clinical Laboratory Improvement Amendments

PHARMACOGENETICS IN **GASTROINTESTINAL DISORDERS**

Precision Prescribing

Mutations in genes involved in drug metabolism will affect a patient's response to medication treatment for gastrological and hepatological problems. The spectrum of diseases is vast and at Genesys Diagnostics, our focus is on clinical pharmacogenetics in inflammatory bowel disease (IBD), Helicobacter pylori infection, gastroesophageal reflux disease, GERD, irritable bowel syndrome (IBS), liver transplantation, and colon cancer. Genetic tests are used regularly in clinical practices, and routine use of many of these tests will become even more common with time.

ACHIEVE OPTIMAL PRESCRIBING

Proper prescription involves the selection of the correct drug, dose and duration of administration. Pharmacogenetic testing is a type of genetic test that in some instances can predict how a person will respond to specific medications. [1]. Pharmacogenetic testing is used in many areas of gastroenterological therapies to help healthcare providers find both the proper medication and dosage for their patients, helping to prevent toxicity and adverse drug events.

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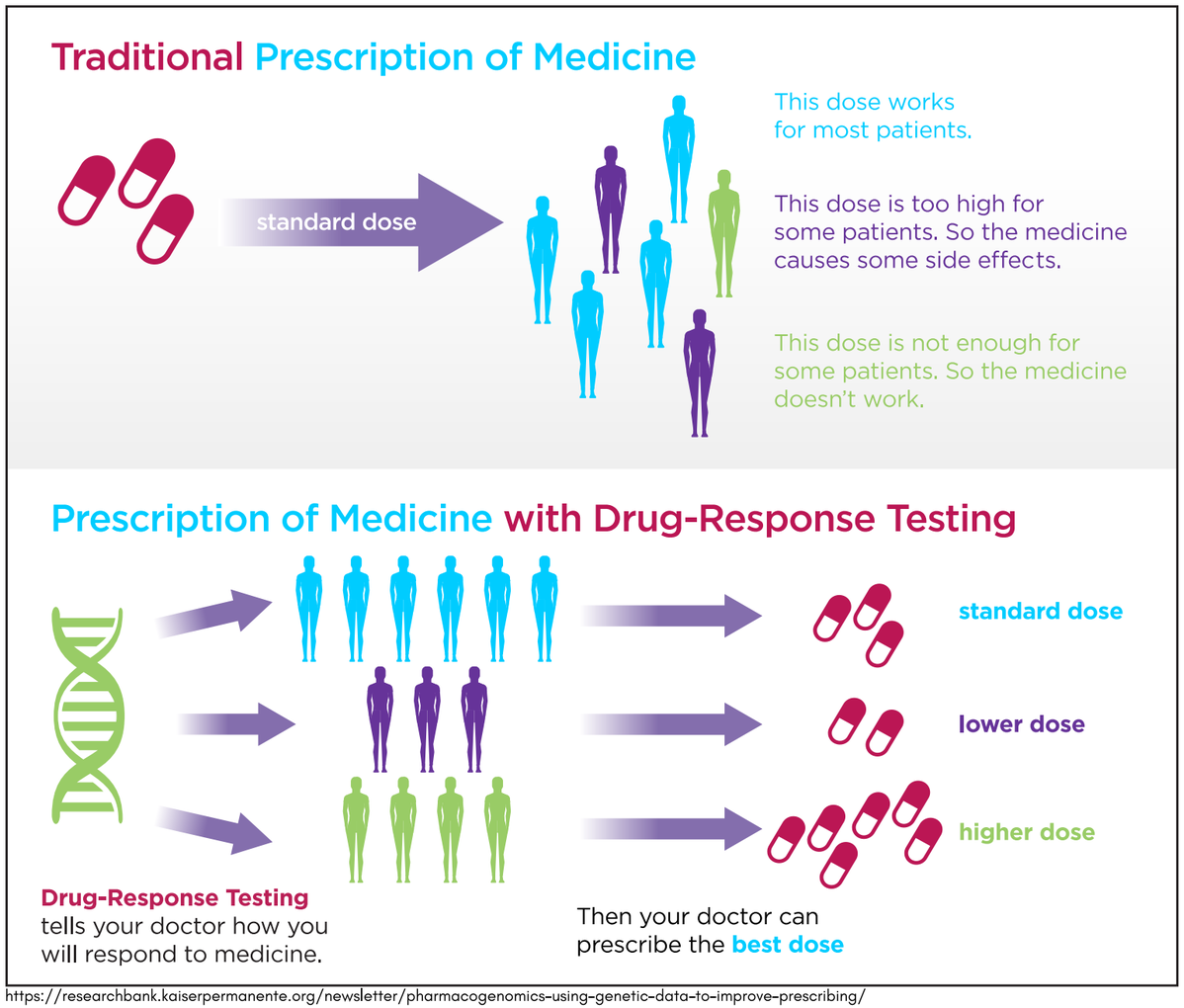
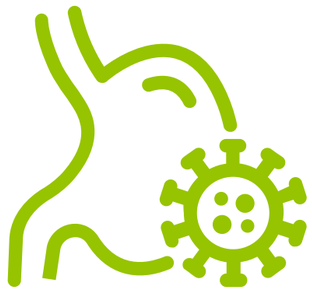


https://researchbank.kaiserpermanente.org/newsletter/pharmacogenomics-using-genetic-data-to-improve-prescribing/

The rationale behind pharmacogenetics is to find genetic polymorphisms in the genes encoding proteins and enzymes involved in drug transport, metabolism and action that can predict the usefulness of a particular drug, increasing the number of responders and decreasing the number of subjects affected by adverse drug reactions [2].
As therapeutic experiences with gastroenterological medications vary, pharmacogenetics testing is a key step in the right direction, helping physicians provide their patients with more effective treatments.



Gastrointestinal Patient Panels

Gastrointestinal Panel:
CYP3A4, CYP2C19, CYP2D6, MTHFR

Comprehensive Panel: ABCB1, APOE, COMT, CYP1A2, CYP3A4, CYP3A5, CYP2C9, CYP2C19, CYP2D6, DRD2, GLP1R, MTHFR, OPRM1, PNPLA5, SLCO1B1, SULT4A1, VKORC1, Factor II, Factor V

Some gastroenterological diseases, such as gastroesophageal reflux and peptic ulcer disease, are among the most frequently diagnosed in adult patients. Additionally, medications used to treat IBD, hepatitis C, and post-operative or cancer-associated nausea/vomiting do not show the desired response in every patient. Genetic factors may partially explain this variability in therapeutic efficacy for medications used to treat gastroenterologic disorders.

Pharmacogenetic testing can aid in the accurate prescription of medications used in the treatment of some cancers, GERD, Gillbert Meulengraht syndrome, Helicobacter pylori infection, hepatitis C, and IBD, and should be considered prior to prescribing.