Pharmacogenomic (PGx) Testing

Tests Guide Appropriate Drug Selection and Dosing

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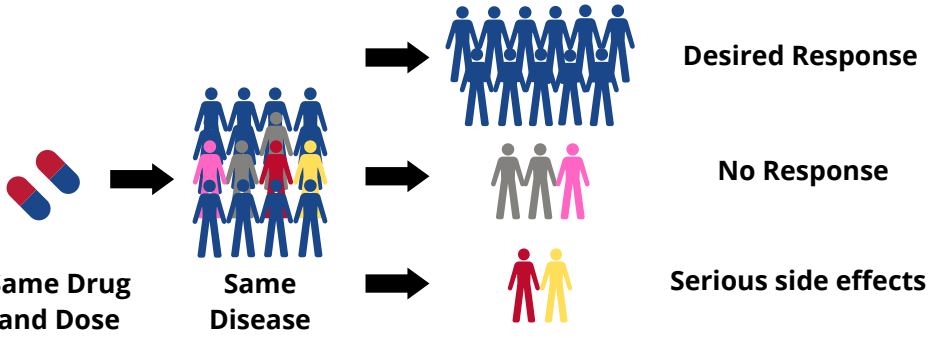
Pharmacogenomic (PGx) testing (also known as pharmacogenomic biomarker testing) is a component of precision medicine that involves examining a patient's inherited genes to detect variations that may impact the way a drug is broken down, absorbed and used within the body. Sometimes these variations can impact the safety and effectiveness of treatment. The same treatment given to patients with the same disease can produce different responses based on each person's inherited genes.

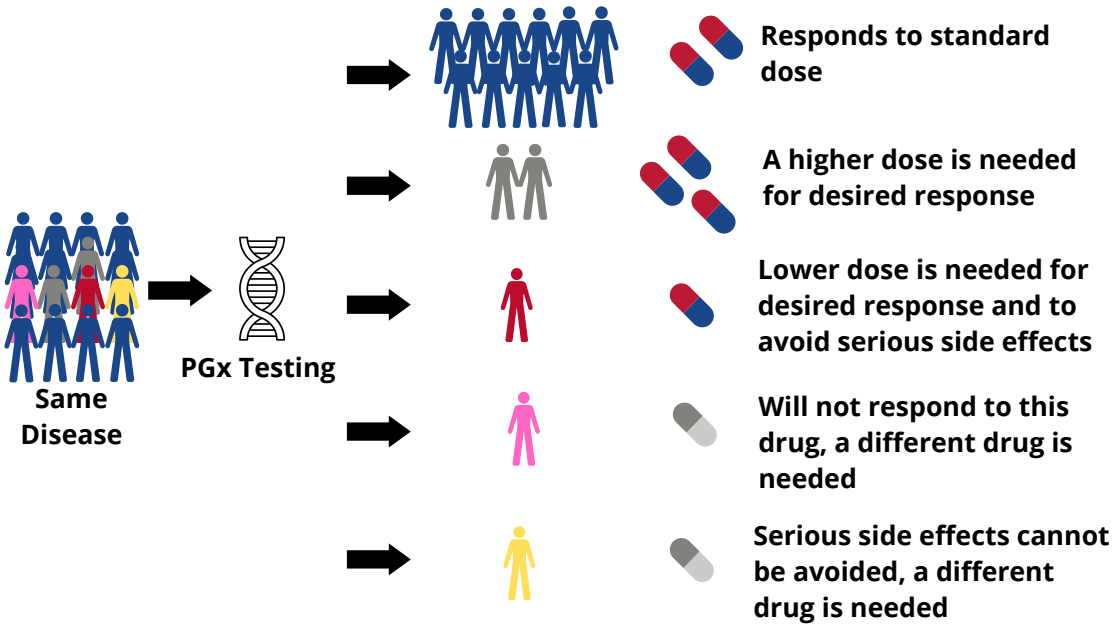
PRESCRIBING WITHOUT PHARMACOGENOMIC TESTING



PGx testing can lead to better clinical outcomes for people with cancer by improving the effectiveness of treatment or by reducing the risk of adverse drug reactions that can cause a patient to stop treatment, or in some cases can lead to death.

Some gene-cancer drug interactions can have a significant impact on patient outcomes. For example, certain variations in the *DPYP* gene have been linked to a higher risk of mortality from cancer drugs called fluoropyrimidines. **Toxicity from one of the most commonly used fluoropyrimidines, fluorouracil (5-FU), is estimated to be responsible for more than 1,300 deaths per year** [1]. With PGx testing, DPYP gene variations can be identified before a patient is treated with fluoropyrimidines, allowing a provider to adjust dosing (or avoid the drug class entirely) depending on PGx results.

PRESCRIBING WITH PHARMACOGENOMIC TESTING



By connecting patients to the right treatment and the right dose at the right time PGx-guided cancer treatment can also be **cost-effective or cost-saving** [2,3].

[1] National Institutes of Health, Public Health Service, HHS. Public teleconference regarding licensing and collaborative research opportunities for: methods and compositions relating to detecting dihydropyrimidine dehydrogenase (DPD). Fed Regist. 2008;73:38233.
[2] Rivers Z, Stenehjem DD, Jacobson P, Lou E, Nelson A, Kuntz KM. A cost-effectiveness analysis of pretreatment DPYD and UGT1A1 screening in patients with metastatic colorectal cancer (mCRC) treated with FOLFIRI+bevacizumab (FOLFIRI+Bev). J Clin Oncol. 2020;38(4_suppl):168.
[3] Verbelen M, Weale ME, Lewis CM. Cost-effectiveness of pharmacogenetic-guided treatment: are we there yet? Pharmacogenomics J. 2017 Oct;17(5):395-402. doi: 10.1038/tpj.2017.21. Epub 2017 Jun 13. PMID: 28607506; PMCID: PMC5637230.

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