

Pharmacogenomics FAQ

What is personalized medicine and why is it the future of healthcare for you?

Personalized medicine is the use of an individual genetic or genomic information to influence their medical treatments or care plans.

What is Pharmacogenetics and what does it mean for you?

Pharmacogenetics refers to the use of an individual's genetic information to predict response to medications or therapies. The theory is that using pharmacogenetic information will allow us to better predict which medications patients will respond to and who will be more or less likely to have side effects on these medications. This is a variation from our current practice of medicine in which most adult patients are started on the same dose of medication regardless of their age, gender, weight, or other individual characteristics. Because this approach holds the promise of providing more specific information than is currently available to predict response to medications and adverse drug events, there is a lot of excitement and enthusiasm to incorporate this approach into the standard practice of medicine. As you might imagine, this approach has the potential to decrease drug costs due to trial-and-error approaches, decrease hospitalizations due to adverse drug events, and overall improve patient satisfaction and compliance.

What are the challenges to using pharmacogenetics in clinical practice now?

1. Drug response is influenced by both genetic and environmental factors. In order to develop clinical practice guidelines, there must be a clear relationship between the genotype (genetic information) and the phenotype (what the patient experiences)
2. Most drugs for which pharmacogenetics is clinically relevant have a narrow therapeutic window, meaning that the therapeutic dose range for these drugs is small and slight variations out of the normal range can have adverse effects. If a drug has little adverse effect over a wide range of doses, knowledge of pharmacogenetics is not likely to be helpful.
3. Pharmacogenetic information is most useful if there is one critical step in the drug response pathway that is controlled principally by a single gene, such that if that gene is inactivated, we would definitely see a change in drug response. When there are multiple pathways involved, the relationship is less clear.

How do we plan to incorporate PGx and PHC in general into the standard practice of medicine?

The greatest limitations to clinical adoption and integration of this information are the need for studies to show clinical validity and utility, the enormity of information in the field of personalized healthcare, and time.

1. We plan to participate in clinical trials to prove clinical utility and validity of personalized healthcare approaches
2. Through our education and awareness campaign, we aim to teach and educate our medical community about personalized healthcare approaches and how they might use this information in their practices today
3. Time: We recognize that physicians have limited time in their practices. We recognize that if we hope to use PGx or PHC information in our daily practices of medicine, we need to leverage the use of our electronic health records to help us keep track of this information and give us useful recommendations.