

# Pharmacogenomics (PGx)



## Genetic Variant

SNPs in drug-related genes

CYP2D6\*4



## Altered Function

Changed enzyme activity or expression level



## Drug Metabolism

Modified drug exposure and response



## Clinical Outcome

Efficacy, toxicity, or adverse reactions



## Dose Adjustment

Personalized dosing recommendation

## PGx Variants

Genetic variations affecting drug response, metabolism, and efficacy

## Drug Metabolism

CYP450 enzymes and transporter polymorphisms impact drug levels

## Dosing Algorithms

Genotype-guided dosing for warfarin, clopidogrel, and more

## CPIC Guidelines

Clinical Pharmacogenetics Implementation Consortium standards

Implementation Barriers: Cost, infrastructure, education, and workflow integration remain challenges for widespread PGx adoption