

Pharmacogenetics (PGx)

A General Practitioner's Guide

Pharmacogenetics (PGx), an important part of precision medicine, is the study of how genetic variability influences drug treatment outcomes. Recommended by Guidelines, pharmacotherapeutic genotyping is one of multiple pieces of information that clinicians should consider when making their therapeutic choice for each patient.

Pharmacogenetic (PGx) Testing with Clinical Labs

Clinical Labs' **Comprehensive PGx Gene Panel** provides clinicians and healthcare providers with comprehensive information to help determine the most appropriate treatment for each individual, particularly in areas such as mental health, pain management, cardiology and oncology. For example, *CYP2D6*, *CYP2C19*, *CYP2C9*, and *SLCO1B1* variants are responsible for the metabolism of a large number of commonly prescribed medications, including warfarin, analgesics, clopidogrel, codeine, tamoxifen, some antidepressants, statins, proton pump inhibitors (PPIs) and anti-emetics. Our Comprehensive PGx Gene Panel can detect polymorphisms in genes coding for drug metabolising enzymes that predispose individuals to metabolising drugs inadequately. *To view our full pharmacogenetics offering, scan the QR code below.*

Genes included in our Comprehensive PGx Panel	
<i>CYP2D6</i>	<i>CYP2C9</i>
<i>CYP2C19</i>	<i>CYP3A4</i>
<i>CYP3A5</i>	<i>CYP1A2</i>
<i>SLCO1B1</i>	<i>VKORC1</i>

To view a listing of the genes tested and examples of drugs metabolised as part of our Comprehensive PGx Gene Panel, please see the reverse of this flyer.

Your Comprehensive Report

With our Comprehensive PGx Gene Panel, you will receive a comprehensive report that will indicate the genotype and the predicted phenotypes, such as the metaboliser status, along with potential drug-gene interactions and Guidelines' recommendations. Please specify any medications of interest if you want them to be included in the report. The genes can be ordered separately or together - for individual genes, only genotyping/phenotyping will be reported.

When to order

Physicians may order pharmacogenetic testing at the time of drug prescribing and dispensing for patients with genotypes that require action, such as dose reductions. The preemptive use of testing could significantly optimise drug outcomes and be particularly useful for patients undergoing multiple treatments or experiencing poor drug responses.

How to order our Comprehensive PGx Gene Panel

- **What to put on the request form:** Fill out our routine Clinical Labs request form, list the gene required or group of genes and prescribed medications if available.
- **Turnaround time:** Results available 2-3 weeks after the sample receipt date.
- **Specimen details:** 2x EDTA blood samples.
- **Test cost:** An out-of-pocket fee applies. For more information, including pricing, scan the QR code or visit clinicallabs.com.au/pharmacogenetictesting



Comprehensive Pharmacogenetic (PGx) Testing Gene Panel

Examples of drugs metabolised and genes tested

Medication	Gene(s)	Medication	Gene(s)	Medication	Gene(s)
Cardiology		Mental Health		Neurology	
Carvedilol	CYP2D6	Anti-Depressants (TCAs)		Anti-Dementia	
Clopidogrel	CYP2C19	Amitriptyline	CYP2D6, CYP2C19	Donepezil	CYP2D6
Flecainide	CYP2D6	Clomipramine	CYP2D6, CYP2C19	Galantamine	CYP2D6
Metoprolol	CYP2D6	Desipramine	CYP2D6, CYP2C19	Anti-Epileptics	
Warfarin	VKORC1, CYP2C9	Dosulepin	CYP2D6, CYP2C19	Phenytoin/ Fosphenytoin	CYP2C9
Lipid Lowering Medication		Doxepin	CYP2D6, CYP2C19	Multiple Sclerosis	
Atorvastatin	SLCO1B1, CYP3A4	Imipramine	CYP2D6, CYP2C19	Siponimod	CYP2C9
Fluvastatin	SLCO1B1, CYP2C9	Nortriptyline	CYP2D6	Oncology	
Lovastatin	SLCO1B1	Trimipramine	CYP2C19	Gefitinib	CYP2D6
Pitavastatin	SLCO1B1	Anti-Depressants (Other)		Tamoxifen	CYP2D6
Pravastatin	SLCO1B1	Vortioxetine	CYP2D6	Organ Transplant	
Rosuvastatin	SLCO1B1	Anti-Psychotics		Tacrolimus	CYP3A5
Simvastatin	SLCO1B1	Aripiprazole	CYP2D6	Pain Management	
Gastroenterology		Brexpiprazole	CYP2D6	NSAIDs	
Anti-Emetic		Chlorpromazine	CYP2D6	Celecoxib	CYP2C9
Metoclopramide	CYP2D6	Haloperidol	CYP2D6	Flurbiprofen	CYP2C9
Ondansetron	CYP2D6	Olanzapine	CYP1A2	Ibuprofen	CYP2C9
Tropisetron	CYP2D6	Quetiapine	CYP3A4	Piroxicam	CYP2C9
Proton Pump Inhibitors		Risperidone	CYP2D6	Meloxicam	CYP2C9
Esomeprazole	CYP2C19	Zuclopentixol	CYP2D6	Opioids	
Lansoprazole	CYP2C19	Benzodiazepines (Anxiolytics)		Codeine (prodrug)	CYP2D6
Omeprazole (Losec)	CYP2C19	Clobazam	CYP2C19	Dihydrocodeine	CYP2D6
Pantoprazole	CYP2C19	Diazepam (Valium)	CYP2C19	Tramadol	CYP2D6
Rabeprazole	CYP2C19			Urology	
Mental Health				Darifenacin	CYP2D6
Anti-ADHD				Mirabegron	CYP2D6
Atomoxetine	CYP2D6			Tamsulosin	CYP2D6
Dextroamphetamine	CYP2D6			Tolterodine	CYP2D6
Lisdexamfetamine	CYP2D6			Anti-Fungal	
Anti-Depressants (MOAs)				Voriconazol	CYP2C19
Moclobemide	CYP2C19				
Anti-Depressants (SNRIs)					
Venlafaxine	CYP2D6				
Anti-Depressants (SSRIs)					
Citalopram	CYP2C19				
Escitalopram	CYP2C19				
Fluoxetine (Prozac)	CYP2D6				
Fluvoxamine	CYP2D6				
Paroxetine	CYP2D6				
Sertraline (Zoloft)	CYP2C19				

Please note that this is a guide for gene selection. Some specific medications may not be reported if they are listed under a drug class that is metabolised by the relevant gene.

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