Genomic Diagnostics
LEADING THE WAY TO IMPROVE HEALTH

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PHARMACOGENETICS – CARDIOLOGY MEDICATION FACT SHEET

Pharmacogenetics (PGx) can be helpful in guiding management of many cardiology related conditions. As part our PGx multi test we can show how your patient processes certain cardiology specific medications including cholesterol-lowering medications, beta blockers, antiplatelet drugs and more. The patient's DNA results can support other clinical information so you can make a more informed decision on the best drug and dose for them to maximise their clinical outcomes and minimise adverse side effects.

Medications covered by our PGx Multi report

Drug Class	Drug	Gene	Benefits of PGx Testing
Antiplatelet	Clopidogrel	CYP2C19	Clopidogrel is a prodrug which is metabolised by CYP2C19 to its active form producing antiplatelet activity. An individual's metaboliser type will determine the level of available active drug and therefore antiplatelet effect. In some cases, an alternative drug is recommended for better clinical outcomes.
Cholesterol lowering	Atorvastatin Fluvastatin Lovastatin Pitavastatin Pravastatin Rosuvastatin Simvastatin	SLCO1B1 SLCO1B1/CYP2C9 SLCO1B1 SLCO1B1 SLCO1B1 SLCO1B1 SLCO1B1	The statins covered by a PGx report have cholesterol reducing effects but can also have a risk of developing statin induced myopathy. The SLCO1B1 gene encodes for the transporter protein that moves the active drug into the cell. Changes can alter the statin exposure which can lead to a risk of developing statin related myopathy.
Beta Blocker	Metoprolol	CYP2D6	Metoprolol is metaboloised by CYP2D6 and is used in the treatment of heart failure. The genetic results can aid in assessing clinical exposure and allow for recommendations of dose or drug changes to ensure adequate clinical outcomes.
Antiarrhythmic	Flecanide	CYP2D6	Flecanide is used to control heart rate arrhythmias. The CYP2D6 gene is responsible for its metabolism. By identifying differences in metabolism, patient adverse effects can be decreased.
Anticoagulant	Warfarin	VKORC1/CYP2C9	Warfarin metabolism is determined by the VKORC1/CYP2C9 genes. Traditionally INR results and an algorithm can establish the correct drug dose. Genetics can determine a person's anticoagulant activity allowing for a correct dose to be given leading to a decreased risk of over anticoagulation and subsequent of adverse effects.

Results backed by scientific evidence

Our report recommendations are supported by the guidelines of the Royal Dutch Pharmacists Association, Pharmacogenetics Pharmacogenomics Working Group & the Clinical Pharmacogenetics Implementation Consortium (CPIC).

For a full list of the medications covered in the PGx multi test, please see our website at genomicdiagnostics.com.au/practitioners/pharmacogenomic-testing/.

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Case study

John is a 73 year old male who suffers from hypertension, elevated cholesterol and osteoarthritis.
His current medications include perindopril 10mg and simvastatin 40mg.

John suffered from acute coronary syndrome and was started on dual antiplatelet therapy with aspirin + clopidogrel, metoprolol and his simvastatin was increased to 80mg.

He presented a few weeks later with a stent thrombosis.

After completing a PGx test, it was found that he was a CYP2C19 poor metaboliser. As a result he had reduced conversion of clopidogrel to the active form and therefore decreased drug exposure and reduced clinical effects leading to decreased antiplatelet activity. This was the cause of the stent thrombosis.

The recommendation is to use an alternative antiplatelet such as prasugrel or ticagrelor.

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