ALBERTA PRECISION LABORATORIES
Leaders in Laboratory Medicine

Arrhythmia Gene Panels: Information for Ordering Providers

Arrhythmia is defined as a problem with the heart rhythm and has many different presentations.

1. Long QT syndrome has an incidence of 1/2000 and is characterized by QT prolongation and T-wave abnormalities on the ECG that are associated with ventricular tachycardia.
2. Catecholaminergic polymorphic ventricular tachycardia (CPVT) has an incidence of 1/10 000 and is characterized by episodic syncope occurring during exercise or acute emotion in individuals with normal heart structure.
3. Brugada syndrome has an incidence of 1/2000 and is characterized by cardiac conduction abnormalities (ST-segment abnormalities in leads V_1-V_3) on ECG that are associated with ventricular arrhythmias.

Arrhythmias are genetically heterogeneous, meaning that the condition can be caused by a pathogenic variant(s) in any one of a number of genes. Therefore testing is based on the patient's phenotype and family history and includes a number of related genes.

Since not all genes associated with a given arrhythmia are known or included in the panel, a pathogenic variant will not be identified for every patient. **The absence of a pathogenic variant does not exclude a clinical or genetic diagnosis. Individuals who carry a pathogenic variant in an arrhythmia gene have an inherited form of heart disease and their at-risk family members should be offered genetic testing.**

Arrhythmia Gene Panels

There are 5 arrhythmia gene panels. Please reference the APL Test Directory for a list of genes on each panel and ordering instructions.

- Long QT syndrome (LAB4766) - 16 genes
- Catecholaminergic polymorphic ventricular tachycardia (LAB4768) - 10 genes
- Brugada syndrome (LAB4767) - 1 gene
- Pan arrhythmia (LAB4773) - 47 genes, includes genes with less evidence
- Comprehensive cardiac (LAB4774) - 116 genes, includes all genes on the pan cardiomyopathy panel and the pan arrhythmia panel

Indications for Testing

Individuals with a clinical diagnosis of one of the above conditions are eligible for testing. Each patient is eligible to have only one cardiac gene panel. Please select the most appropriate test for your patient. Requests to reanalyze uninformative results for other genes/panels will be reviewed on a case by case basis and may not be accommodated. Refer to algorithm below for the most appropriate test for your patient.

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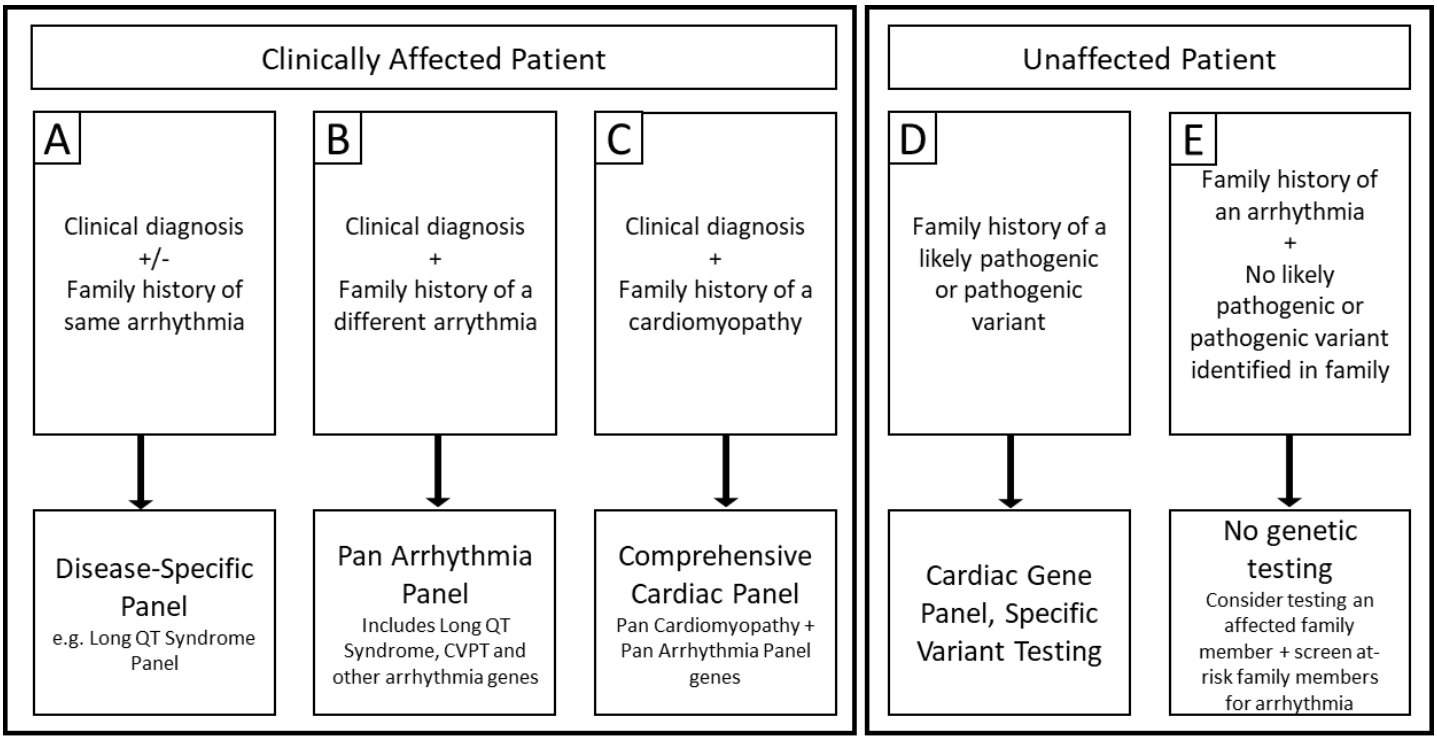

Adapted from Yogasundaram et al. Cardiomyopathies and Genetic Testing in Heart Failure: Role in Defining Phenotype-Targeted Approaches and Management. Can J Cardiol. 2021 Apr;37(4):547-559.

Ordering Privileges

Diagnostic testing can be ordered by Clinical Genetics or the Medical Examiner's Office.
Predictive testing for a known pathogenic/likely pathogenic variant is restricted to Clinical Genetics.

When can I expect results?

Results may take up to 4 months.

How are results reported?

Results are sent to the ordering provider and available in Netcare and Connect Care.

Requisition forms, contact information and other resources can be found at Genetics & Genomics

Contact Information

Laboratory Genetic Counsellors, Genetics & Genomics North Sector at 780-407-1015.

Resources

Canadian SADS Foundation