**Letter of Medical Necessity for the *SCN5A*-Brugada Syndrome Panel**

**Patient Information**

**Date:**

**Patient Name:**

**Patient DOB:**

**Insurance Company Name, Address, City, State:**

**Policy Number:**

**Group Number:**

**ICD10 Codes:**

**Test Information**

**Test Name:** *SCN5A*-Brugada Syndrome Panel

**CPT Codes:** 81407x1, 81479x1

**Laboratory:**

GeneDx, Inc.

(NPI#1487632998 / TAXID#205446298 / CLIA#21D0969951)

207 Perry Parkway

Gaithersburg, MD 20877

Telephone: (301) 519-2100

Fax: (201) 421-2010

This letter is in regards to my patient, [FIRST NAME LAST NAME], to request full coverage for the *SCN5A*-Brugada Syndrome Panel to be performed by GeneDx. It is my professional determination that testing is medically necessary and will have a direct impact on this patient’s treatment and management.

**Patient Clinical and Family History**

This testing is requested due to this patient’s personal medical history, which includes the following clinical findings:

* Add Phenotype
* Add Phenotype
* Add Phenotype

The patient’s family history is negative for related conditions / unknown / remarkable for the following related clinical features:

The patient has previously had the following uninformative genetic and other testing:

* Add test
* Add test
* Add test

**Clinical Evidence and Guidelines for Testing**

The *SCN5A*-Brugada Syndrome Panel includes germline analysis of genes causing which is involved in conditions that include severe cardiovascular manifestations, including sudden cardiac arrest and sudden cardiac death. Panel testing includes both sequencing and deletion/duplication analysis of multiple genes simultaneously.

Brugada syndrome (BrS) is a genetic heart disorder due to abnormal ion channel function characterized by ST segment elevation on ECG (leads V1-3) in the absence of structural heart disease.1,2,3 It is associated with increased risk for syncope, ventricular tachyarrhythmia and sudden cardiac death. In individuals with an apparently normal heart, BrS accounts for up to 20% of unexpected sudden deaths and is suspected to account for 4-12% of all unexpected sudden deaths.4 BrS occurs worldwide and is estimated to affect 5 per 10,000 individuals of all ethnicities, with some regional differences.3

The diagnosis of BrS is based on clinical history, ECG findings, and family history. Typically, the disorder manifests in patients between ages 20 to 40, but symptoms have been reported from infancy through late life.1 Most individuals with BrS are asymptomatic. The most common clinical symptoms are syncope and cardiac arrest that occur at rest, during sleep, or with high fever. In some patients, symptoms of BrS will develop after taking certain medications such as sodium channel blockers. Sudden cardiac death may occur without preceding symptoms and without an identifiable cause at autopsy. Additionally, many symptoms of BrS are similar to those of other heart conditions, such as arrhythmogenic right ventricular cardiomyopathy (ARVC), atypical right bundle branch block, left ventricular hypertrophy, early repolarization, acute myocardial infarction, and acute pericarditis.1

The diagnosis of Brugada syndrome can often be established by noninvasive electrophysiological studies, including electrocardiogram, cardiac stress test, Holter and other event monitoring. However, when imaging results are absent, subtle, or non-specific, molecular diagnosis with genetic testing aids in diagnosis, management and establishing recurrence risk for family members.

National and international medical societies have published guidelines that recommend genetic testing for Brugada syndrome:

* The Heart Rhythm Society / European Heart Rhythm Association (HRS/EHRA) Expert Consensus Statement on the State of Genetic Testing for the Channelopathies and Cardiomyopathies states that comprehensive or targeted genetic testing can be useful for patients with clinical suspicion of BrS.8
* In 2018, an expert panel convened by the NHGRI-funded Clinical Genome Resource (ClinGen) evaluated the evidence supporting the link between Brugada syndrome and multiple genes using an evidence-based gene curation framework developed by ClinGen. The expert panel concluded there was definitive-level evidence for the *SCN5A* gene for Brugada syndrome, while the evidence for other genes associated with Brugada syndrome is limited.7

**Patient Clinical Utility and Medical Management Implications**

The results of this testing will guide appropriate medical management for this patient, including surveillance, preventive measures, and medical and surgical treatment. Treatment for arrhythmia, and surveillance for progression, is critical and is strongly influenced by knowledge of the underlying genetic cause.1,5,6 Molecular genetic testing is critical to aid patient management in a cost-effective way and to minimize morbidity and mortality.

Management of Brugada syndrome is summarized in specific consensus documents from the American College of Cardiology / American Heart Association (ACC/AHA), the Heart Rhythm Association (HRS) and the European Heart Rhythm Association (EHRA), and in the European Society of Cardiology (ESC) guidelines on ventricular arrhythmias.5,6,8 ICD implantation is the only therapy currently known to be effective in persons with Brugada syndrome with syncope or cardiac arrest.5,6 In patients with Brugada syndrome, quinidine has been shown to restore ST segment elevation and decrease the incidence of arrhythmias and can be useful in patients with Brugada syndrome.1

Specifically for this patient, the results of this test will also {ADD ADDITIONAL INFORMATION}

**Summary**

The *SCN5A*-Brugada Syndrome Panel at GeneDx is a highly sensitive and cost-effective genetic test. I am requesting coverage for this medically necessary test in order to establish appropriate medical management for this patient. Without testing, treatment would be suboptimal, subjecting this patient to increased morbidity and potentially early mortality.

Thank you for your review and consideration. If you have questions, or if I can be of further assistance, please do not hesitate to call me at (XXX) XXX-XXXX.

Sincerely,

Signature

Ordering Provider’s Name

References:

1. Brugada, Campuzano, Brugada, et al. Brugada Syndrome. 2005 Mar 31 [Updated 2014 Apr 10]. In: Pagon RA, Adam MP, Ardinger HH, et al., editors. GeneReviews® [Internet]. Seattle (WA): University of Washington, Seattle; 1993-2014. Available from: <http://www.ncbi.nlm.nih.gov/books/NBK1517/>
2. Hedley et al. (2009) The genetic basis of Brugada syndrome: a mutation update. Human Mutation 30 (9):1256-66 (PMID: 19606473)
3. Fowler et al. (2009) Clinical spectrum of patients with a Brugada ECG. Current Opinion In Cardiology 24 (1):74-81 (PMID: 19102039)
4. Antzelevitch et al. (2002) Brugada syndrome: a decade of progress. Circ. Res. 91 (12):1114-8 (PMID: 12480811)
5. Priori et al. (2013) Executive summary: HRS/EHRA/APHRS expert consensus statement on the diagnosis and management of patients with inherited primary arrhythmia syndromes. *Europace* 15 (10):1389-406 (PMID: 23994779)
6. Priori et al. (2015) ESC Guidelines for the management of patients with ventricular arrhythmias and the prevention of sudden cardiac death: The Task Force for the Management of Patients with Ventricular Arrhythmias and the Prevention of Sudden Cardiac Death of the European Society of Cardiology (ESC)Endorsed by: Association for European Paediatric and Congenital Cardiology (AEPC). *Europace* 17 (11):1601-87 (PMID: 26318695)
7. Hosseini et al. (2018) Reappraisal of Reported Genes for Sudden Arrhythmic Death: An Evidence-Based Evaluation of Gene Validity for Brugada Syndrome. Circulation : (PMID: 29959160)
8. Ackerman et al. (2011) HRS/EHRA expert consensus statement on the state of genetic testing for the channelopathies and cardiomyopathies this document was developed as a partnership between the Heart Rhythm Society (HRS) and the European Heart Rhythm Association (EHRA). Heart Rhythm : The Official Journal Of The Heart Rhythm Society 8 (8):1308-39 (PMID: 21787999)